

FACULTY VITA

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Resident Director and Professor of Agricultural Engineering
 Texas AgriLife Research—Amarillo and Vernon
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| <u>Degree</u> | <u>Field</u> | <u>Institution</u> | <u>Date</u> |
|---------------|--------------------------|---------------------------|-------------|
| B. S. | Agricultural Engineering | Texas Tech University | 1965 |
| M. S. | Agricultural Engineering | Oklahoma State University | 1967 |
| Ph. D. | Agricultural Engineering | Oklahoma State University | 1969 |

SERVICE ON FACULTY OF TEXAS A&M UNIVERSITY SYSTEM: Years of Service: 37

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|--------------|--|
| 1996-present | Professor and Resident Director, Texas AgriLife Research. Texas AgriLife Research and Extension Center- Amarillo, TX; and Professor, West Texas A&M University, Division of Agriculture, Canyon, TX |
| 2008-present | Professor and Resident Director, Texas AgriLife Research. Texas AgriLife Research and Extension Center- Vernon TX |
| 1990-95 | Professor, Associate Department Head and Program Leader for Extension Agricultural Engineering, Department of Agricultural Engineering, Texas Cooperative Extension (TCE), Texas A&M University System, TAMUS. |
| 1989-90 | Interim Program Leader and Extension Agricultural Engineer -- Waste Management, Department of Agricultural Engineering and TCE |
| 1984-91 | Professor & Extension Agricultural Engineer, TCE & Agricultural Engineering Department, TAMUS. |
| 1981-84 | Associate Professor, Agricultural Engineering Department |
| 1972-89 | Agricultural Engineer/Waste Management, TCE, TAMUS. |

PROFESSIONAL REGISTRATION: Texas Board of Professional Engineers (PE), License No. 33690 in Texas

MEMBERSHIPS:

American Society of Biological and Agricultural Engineers/ASABE (44 years); Fellow, 1990
 Council for Agricultural Science and Technology
 Research Centers Administrators Society
 Texas Farm Bureau
 Texas Sheep & Goat Raisers Association

HONORS AND AWARDS:

Vice Chancellor's Award in Excellence, Texas A&M University System Agriculture Program (Industry/Agency/University/Association Team), 2003
 Distinguished Achievement Award, (National) Epsilon Sigma Phi, Water Quality Education, 1996
 USDA Award for Superior Service (Co-Winner, Extension Water Quality Initiative Team), 1995
 Environmental Excellence Award, U. S. Environmental Protection Agency (USEPA) Region VI, 1994
 Environmental Excellence Award, Texas Cattle Feeders Association, 1990
 Fellow, American Society of Agricultural Engineers (ASAE), 1990
 G. B. Gunlogson Countryside Engineering Award, ASAE, 1989

INDUSTRY/GOVERNMENTAL/EXTERNAL COMMITTEES:

Project Director, USDA-CSREES Special Research Grant, Air Quality: Reducing Emissions from Cattle Feedlots & Dairies (TX & KS), 2002-2010
 USDA Agricultural Air Quality Task Force, 1997-2004
 Panhandle Regional Water Planning Group, Member, 1999-2009
 Harrington Regional Medical Center, Board of Directors, 1999-2009

- Administrators Council, 1996-2009; Chairman, 2003 – 2004
- Executive Committee, 2003 - 2004

 National Center for Manure & Animal Waste Management (14-States USDA-CSREES), Operations Committee-2000-2003
 National Pork Producers Council

- Agricultural Technology Evaluation Program, 2000
- Odor Subcommittee/Research Committee, 1994-96

 National Cattlemen's Beef Association, Effluent Limitations Guidelines Task Force, 1998-99
 Texas Natural Resource Conservation Commission, Agricultural Advisory Committee, 1992-98
 National Cattlemen's Beef Association, Environmental Stewardship Award Committee, 1991-98

PATENT ACTIVITY

- Annamalai, K., **J.M. Sweeten** and M. Freeman. 2009. A Reburn Injection System and Optimization with Animal Waste Based Biomass Fuels (ANB) for NO_x and Hg Reduction in Power Plants. Submitted to TAMUS Office of Technology Commercialization (OTC), Texas A&M University System, College Station, TX.
- Sweeten, J.M.**, K. Annamalai, K. Heflin, B.W. Auvermann, L.A. McDonald, L.W. Greene and D. Tolleson. 2008. Production of Thermally-Advanced Feedlot Biomass for Use as Fuel. Texas AgriLife Research-Amarillo. Submitted to U.S. Patent Office, Washington, D.C. Application No. 12/152,374. May 14, 2008.
- Annamalai, K., and **J.M. Sweeten**. 2005. Reburn System with Feedlot Biomass. U.S. Patent No. US6,973,883 B-1. U.S. Patent & Trademark Office, Washington, D.C. 20331. Date of issue: December 3, 2005. 12 p.

INVITED PRESENTATION, INTERNATIONAL

- Sweeten, J.M. 2011. Biofuel-related properties of animal manure from open-lot cattle feedlots and dairies. China-United States Workshop on Biomass Gases Technology and Application. Ministry of Science and Technology (MOST), Beijing University on Chemical Technology (BUCT), Beijing, China. October 29, 2011.

PRINCIPAL RECENT PUBLICATIONS, Last 5 Years (career total= 600):

- Bonifacio, H.F., R.G. Maghirang, E.B. Razote, B.W. Auvermann, J.P. Harner, J.P. Murphy, L. Guo, **J.M. Sweeten**, and W.L. Hargrove. 2011. Particulate Control Efficiency of a Water Sprinkler System at a Beef Cattle Feedlot in Kansas. Transaction of the ASABE. 54(1): 295-304.
- Lawrence, B., K. Annamalai, **J.M. Sweeten** and K. Heflin. 2009. Co-firing Coal and Dairy Biomass in a 29 KWt Furnace. Applied Energy. October. pp. 2359-2372.
- Carlin, N. T., K. Annamalai, W. L. Harman, and **J.M. Sweeten**. 2009. The Economics of Re-burning with Cattle Manure-based Bioenergy in Existing Coal-Fired Power Plants for NO_x and CO₂ Emissions Control. Journal of Biomass Energy. April, pp. 1139-1157.
- Annamalai, K., **J.M. Sweeten**. 2009. Ash Deposition during Combustion of Cattle Biomass as a Reburn Fuel in a Small-Scale Boiler Burner Facility under Unsteady Transition Conditions. International Journal of Energy Research. May. Accepted. 34 pg.
- Sweeten, J.M.**, K. Heflin, K. Annamalai, B.W. Auvermann, F.T. McCollum, and D.B. Parker. 2009. Combustion-Fuel Properties of Manure or Compost from Paved vs. Un-Paved Cattle Feedlots. In: Proceedings of Texas Animal Manure Management Issues Conference, Texas A&M University System, Round Rock, TX. September 29-30. Pp. 167-180.
- Oh, H., P.G. Goughnour, B. Thien, K. Annamalai and J.M. Sweeten. 2008. NO_x Reduction using Cattle Feedlot Biomass as Reburn Fuel in Coal-Fired Boilers. Energy and Fuels. April. 34 Pg.
- Carlin, N.T., K. Annamalai, H. Oh, G.G. Avizo, B. Lawrence, U. Arcot, **J.M. Sweeten**, K. Heflin and W.L. Harman. 2008. Co-Combustion and Gasification of Coal and Cattle Biomass: A Review of Research and Experimentation. Progress in Green Energy. (Accepted).
- Carlin, N., K. Annamalai, **J.M. Sweeten**, S. Mukhtar. 2007. Thermo-Chemical Conversion Analysis On Dairy Manure-Based Biomass Through Direct Combustion. International Journal of Green Energy. 4: 133-159.
- Annamalai, K., S. Priyadarsan, S. Arumagam, **J.M. Sweeten**. 2007. Principles of Energy Conversion for Coal, Animal Waste, and Biomass Fuels. Encyclopedia of Energy Engineering. Encyclopedia of Energy Engineering and Technology, 1:1, 476-497. 21 p.
- Annamalai, K., B. Martin, **J. M. Sweeten**, K. Heflin. 2006. Pyrolysis, Ignition and Fuel Characteristics of Coal, Feedlot Biomass, and Coal: Feedlot Biomass Blends. Task 1: Fuel Properties. Texas Engineering Experiment Station & Texas Agricultural Experiment Station, Texas A&M University System. Submitted to Texas Commission on Environmental Quality, Austin, TX March 31, 2006. 11 p.
- Annamalai, K., P.G. Goughneur, H. Oh, U. Arcot, and **J.M. Sweeten**. 2006. NO_x and Hg Capture Using Coal, Feedlot Biomass (Cattle Manure) as Reburn Fuels. Task 2: Reburn Experiments for NO_x and Hg Reduction. Texas Engineering Experiment Station & Texas Agricultural Experiment Station, Texas A&M University System. Submitted to Texas Commission on Environmental Quality, Austin, TX August 31, 2006. 22 p.
- Casey, K.D., D.B. Parker, K. **Sweeten, J.M.**, B.W. Auvermann, S. Mukhtar, J.A. Koziel. 2006. Hydrogen Sulfide Emissions from Southern Great Plains Beef Feedlots: A Review. Workshop on Agricultural Air Quality: State of the Science, Potomac, MD. June 5-8. Pp 186-188.
- Casey, K.D., D.B. Parker, K. **Sweeten, J.M.**, B.W. Auvermann, S. Mukhtar, J.A. Koziel. 2006. Hydrogen Sulfide Emissions from Southern Great Plains Beef Feedlots: A Review. In: 2006 Beef Cattle Research in Texas, Department of Animal Science. Texas A&M University, College Station, TX. August. Pp 27-29.
- Colmegna, G., M.B. Puchakagala, K. Annamalai, **J.M. Sweeten**, and K. Heflin. 2006. A Reburn Model for Production of NO_x and Hg Capture with Coal and Feedlot Biomass (Cattle Manure) as Reburn Fuels. Task 4: Model Development. Texas Engineering Experiment Station & Texas Agricultural Experiment Station, Texas A&M University System. Submitted to Texas Commission on Environmental Quality, Austin, TX August 1, 2006. 25 p.
- Megel, A.J., D.B. Parker, R. Mitra, **J.M. Sweeten**. 2006. Assessment of Chemical and Physical Characteristics of Bottom, Cyclone and Baghouse Ashes from the Combustion of Manure. Paper No. 064043, Proceedings, 2006 ASABE (American Society of Agricultural & Biological Engineers), Annual International Meeting, Portland, OR, July 9-12. p.11.
- Sweeten, J.M.**, D.B. Parker, K.D. Casey, S. Mukhtar, J.A. Koziel. 2006. Hydrogen Sulfide Emissions from Southern Great Plains Beef Feedlots & Dairy Corrals. In: Proceedings, Air Quality Conference, Potomac, MD. June 5-7.

- Sweeten, J.M.,** B.W. Auvermann. 2006. What's Ahead in Water, Air & Environmental Quality Issues Affecting the Beef Feedlot Industry: A Southern Great Plains Perspective. Proceedings, Visions for Animal Agriculture & the Environment, John M. Airy Symposium, Iowa State University, Ames, Iowa. January 5-6. 11 p.
- Sweeten, J.M.,** K. Heflin, K. Annamalai, B.W. Auvermann, F.T. McCollum, D.B. Parker. 2006. Combustion-Fuel Properties of Manure of Compost from Paved vs. Un-paved Cattle Feedlots. Paper No. 064143, Proceedings, 2006 ASABE (American Society of Agricultural & Biological Engineers), Annual International Meeting, Portland, OR, July 9-12. 12 p.