

Saqib Mukhtar

Department: Biological and Agricultural Engineering

Contact Information: 207A Scoates Hall, 2117 TAMU
College Station, TX 77843-2117
Phone/Fax: (979) 458-1019 / 847-8828
E-mail: mukhtar@tamu.edu
<http://tammi.tamu.edu>, <http://caaqs.tamu.edu>

EDUCATION

- May 1989 **Ph.D. in Agricultural Engineering** with a Minor in Water Resources. Iowa State University.
Dissertation: Soil Aeration and Crop Growth in Response to Excess Water.
- May 1984 **M.S. in Agricultural Engineering.** Iowa State University.
Thesis: Effects of Time and Tillage on Soil Water Infiltration.
- August 1981 **B.S. in Agricultural Engineering.** University of Agriculture, Faisalabad, Pakistan.

EXPERIENCE

Interim Associate Department Head and Extension Program Leader for Biological and Agricultural Engineering. Texas AgriLife Extension (November 2010-present).

Professor and Extension Agricultural Engineer. Texas AgriLife Extension and Research, Texas A&M System, College Station, Texas (September 2010-present).

POSITION DESCRIPTION

- Provide leadership, delivery and support for extension and research program in engineering systems related to environmental quality management of animal feeding operations in Texas.
- Develop and implement nationally recognized educational, technology transfer, and research programs that address water quality, air quality and manure management issues related to livestock and poultry feeding operations.
- Guide graduate student research, and provide engineering leadership to interdisciplinary and interagency programs involving improved manure and wastewater practices, air and water quality protection, manure utilization and design of environmentally sustainable facilities.

Appointment: Extension (70%); Research (30%)

Faculty, Water Management and Hydrologic Science Interdisciplinary Graduate Degree program (2008-present)

Faculty, Center for Agricultural Air Quality Engineering and Science (CAAQES). Texas A&M University, College Station, Texas (2002-present).

PROFESSIONAL REGISTRATION

Licensed Professional Engineer, State of Texas, Registration Number: 90744.

PAST POSITIONS AND EXPERIENCE

Associate Professor and Extension Agricultural Engineer. Texas AgriLife Extension and Research, Texas A&M System, College Station, Texas (September 2004-August 2010).

Assistant Professor and Extension Agricultural Engineer. Texas AgriLife Extension and Research, Texas A&M System, College Station, Texas (August 1998-August 2004).

Agricultural Engineering Field Specialist. Iowa State University Extension, Osceola, Iowa. (June 1993-July 1998).

- Provided program leadership, delivered and supported engineering aspects of crop and livestock production, processing systems, and environmental quality in a 14 county central Iowa area.
- Provided research based unbiased information and education to producers, agricultural professionals, federal and state agencies, and media in areas of livestock production-including waste handling, storage, and utilization, and livestock housing; soil conservation and water management--including conservation tillage and soil-air-water-and plant relationships; grain drying, handling, and storage; water quality and farm safety.

Civil Engineer. USDA-Natural Resources Conservation Service, Engineering Project Office, Centerville, Iowa. (October 1991 - June 1993).

- Involved in installation of 154 floodwater-retarding structures on a 160,000 acre watershed project in four southeast Iowa counties. Designed structures and drafted plans using CADD system.
- Performed and plotted surveys of the proposed dam sites using state-of-the-art surveying equipment and computer programs. Assisted with contract administration work including modifications and payment estimates.
- Reviewed planned structure sites with landowners and reported design and construction progress at the watershed board and public meetings. Coordinated with Iowa Department of Natural Resources and other state and local agencies on the feasibility of incorporating wetlands into the design of floodwater- retarding structures.

Civil Engineer. USDA-Natural Resources Conservation Service, Fort Dodge Area Office, Iowa. (September 1990 - October 1991).

- Provided engineering assistance to field office staff, districted cooperators and other land users in a 19 county area.
- Conducted site investigations to determine need and feasibility of engineering practices to control soil erosion and conserve water.
- Performed engineering surveys for use in planning and design work. Designed, drafted and prepared cost estimates for engineering practices including water and sediment control structures, terraces, detention structures, waterways, tile drainage, agricultural manure management systems, and wetlands.

Postdoctoral Research Associate. Department of Agricultural & Biosystems Engineering, Iowa State University, Ames, Iowa. (April 1989 - August 1990).

- Evaluated the effects of alternate chemical management practices on drainage water quality and agricultural production.
- Installed field test plots and designed a drainage system for the research site.
- Performed instrumentation and data collection to determine effect of agricultural management practices on chemical contaminant transport to agricultural drainage wells.

Research Assistant. Department of Agricultural & Biosystems Engineering, Iowa State University, Ames, Iowa. (September 1982 - April 1989).

- Evaluated the effects of different tillage systems on the physical and hydraulic properties of soil.
- Evaluated the effects of excessive water conditions on soil atmospheres and crop growth.

Research Officer. On Farm Water Management Research Project, University of Agriculture, Faisalabad, Pakistan. (September - December 1981).

- Assisted with a research study to evaluate the effect of ground slope on the efficiency of border irrigation.

REFEREED JOURNAL PUBLICATIONS

1. **Mukhtar, S.**, S. Borhan and J. Beseda II. 2011. Evaluation of a Weeping Wall Solid-Liquid Separation System for Flushed Dairy Manure. *Applied Engineering in Agriculture*. 27(1): 135-142.
2. Borhan, M. S., S. C. Capareda, **S. Mukhtar**, W. B. Faulkner, R. McGee and C. B. Parnell, Jr. 2011. Greenhouse Gas Emissions from Ground Level Area Sources in Dairy and Cattle Feedyard Operations. *Atmosphere* (2) 303-329.
3. Borhan, M. S., S. C. Capareda, **S. Mukhtar**, W. B. Faulkner, R. McGee and C. B. Parnell, Jr. 2011. Determining Seasonal Greenhouse Gas Emissions from Ground-Level Area Sources in a Dairy Operation in Central Texas. *Journal of the Air & Waste Management Association*. 61: 786-795.
4. Giri, S*. **S. Mukhtar** and R. Wittie. 2010. Vegetative Covers for Sediment Control and

- Phosphorus Sequestration from Dairy Waste Application Fields. Transactions of the ASABE. 52 (3) 803-811.
5. Capareda, S. C., **S. Mukhtar**, C. Engler and L. B. Goodrich*. 2010. Energy usage survey of dairies in the Southwestern United States. Applied Engineering in Agriculture. 26 (4): 667-675.
 6. **Mukhtar, S.**, S. Borhan*, S. Rahman and J. Zhu. 2010. Evaluation of a field-scale surface aeration system in an anaerobic poultry lagoon. Applied Engineering in Agriculture. 26(2): 307-318.
 7. **Mukhtar, S.**, A. Mutlu*, R. E. Lacey and C. B. Parnell. 2009. Seasonal ammonia emissions from a free-stall dairy in central Texas. Journal of the Air & Waste Management Association. 59: 613-618.
 8. **Mukhtar, S.**, M. L. McFarland and C. A. Wagner. 2008. Runoff and water quality from inorganic fertilizer and erosion control compost treatments on roadway sideslopes. Transactions of the ASABE. 51(3): 927-936.
 9. **Mukhtar, S.**, S. S. Sadaka*, A. L. Kenimer, S. Rahman* and J. G. Mathis*. 2008. Acidic and alkaline bottom ash and composted manure blends as a soil amendment. Bioresource Technology. 99 (2008) 5891-5900.
 10. **Mukhtar, S.**, A. Mutlu*, S. Capareda, and C. B. Parnell. 2008. Seasonal and spatial variations of ammonia emissions from an open-lot dairy operation. Journal of the Air & Waste Management Association. 58: 369-376.
 11. Rahman, S.* and **S. Mukhtar**. 2008. Efficacy of microbial treatment to reduce phosphorus and other substances from dairy lagoon effluent. Applied Engineering in Agriculture. 24 (6): 809-819.
 12. Helton, T.J., T. J. Butler, M. L. McFarland, F. M. Hons, **S. Mukhtar**, and J. P. Muir. 2008. Effects of Dairy Manure Compost and Supplemental Inorganic Fertilizer on Coastal Bermudagrass. Agron. J. 100:924-930.
 13. **Mukhtar, S.**, L. A. Lazenby,* and S. Rahman*. 2007. Evaluation of a synthetic tube dewatering system for animal waste pollution control. Applied Engineering in Agriculture. 23 (5): 669-675.
 14. Ullman, J. L.* and **S. Mukhtar**. 2007. Impact of dairy housing practices on lagoon effluent characteristics: Implications for nitrogen dynamics and salt accumulation. Bioresource Technology. 98: 745-752.
 15. Zhu, J., C. F. Miller, C. Dong, X. Wu, L. Wang, and **S. Mukhtar**. 2007. Aerator module development using venturi air injectors to improve aeration efficiency. Applied Engineering in Agriculture 23. (5): 661-667.
 16. Carlin, N*., K. Annamalai, J. Sweeten, and **S. Mukhtar** 2007. Thermo-chemical Conversion Analysis on Dairy Manure-based Biomass through Direct Combustion. International Journal of Green Energy. 4: 133-159.
 17. Paul, S.*, R. Srinivasan, J. Sanabria, P. K. Haan, **S. Mukhtar**, and K. Neimann. (2006). Groupwise modeling study of bacterially impaired watersheds in Texas: Clustering analysis. Journal of the American Water Resources Associations. 42(4): 1017-1031.
 18. Kalbasi, A*., **S. Mukhtar**, S. E. Hawkins, and B. W. Auvermann. 2006. Design, utilization, biosecurity, environmental and economic considerations of carcass composting. Compost Science and Utilization. 12(2): 90-102.

19. Kalbasi, A*., **S. Mukhtar**, S. E. Hawkins, and B. W. Auvermann. 2005. Carcass composting for management of farm mortalities: A review. *Compost Science and Utilization*. 13(3): 180-193.
20. Capareda, S. C., C. N. Boriack*, **S. Mukhtar**, A. Mutlu*, B. W. Shaw, R. E. Lacey, and C.B. Parnell, Jr. 2005. The recovery of ammonia and hydrogen sulfide from ground level area sources using dynamic isolation flux chambers- bench scale studies. *Journal of the Air & Waste Management Associations*. 55: 999-1006.
21. Priyadarsan, S*., K. Annamalai, J. M. Sweeten, M. T. Holtzapple, and **S. Mukhtar**. 2005. Co-gasification of Blended Coal with Feedlot and Chicken Litter Biomass. In *Proceedings of the 30th International Symposium on Combustion*. July 25-30, Chicago, IL. The Combustion Institute. Published by Elsevier Inc., 30: 2973-2980.
22. **Mukhtar, S.**, J. L. Ullman*, B. W. Auvermann, S. E. Feagley, and T. A. Carpenter. 2004. Impact of anaerobic lagoon management on sludge accumulation and nutrient content for dairies. *Transactions of the ASAE* 47(1): 250-257.
23. Lacey, R. E., **S. Mukhtar**, J. B. Carey, and J. L. Ullman*. 2004. Review of literature concerning odors from broiler production facilities: 1. Odor concentration and emissions. *The Journal of Applied Poultry Research*. 13: 500-508.
24. Carey, J. B., Lacey, R. E. and **S. Mukhtar**. 2004. Review of literature concerning odors from broiler production facilities: 2. Flock and House Management. *The Journal of Applied Poultry Research*. 13: 509-513.
25. **Mukhtar, S.**, J. L. Ullman*., J. B. Carey, and R. E. Lacey. 2004. A review of literature concerning odors, ammonia and dust from broiler production facilities: 3. Land application, processing and storage of broiler litter. *The Journal of Applied Poultry Research*. 13: 514-520.
26. Ullman, J. L*., **S. Mukhtar**, R. E. Lacey, and J. B. Carey. 2004. A review of literature concerning odors, ammonia and dust from broiler production facilities: 4. Remedial management practices. *The Journal of Applied Poultry Research*. 13: 521-531.
27. Paul, S*., P. K. Haan, M. D. Matlock, **S. Mukhtar** and S. D. Pillai. 2004. Analysis of the HSPF water quality parameter uncertainty in predicting peak in-stream fecal coliform concentrations. *Transactions of the ASAE* 47(1): 69-78.
28. Priyadarsan, S*., K. Annamalai, J. Sweeten, **S. Mukhtar**, and M. Holtzapple. 2004. Fixed bed gasification of feedlot and poultry litter biomass. *Transactions of the ASAE* 47(5): 1689-1696.
29. **Mukhtar, S.**, A .L. Kenimer, S. S. Sadaka* and J. G. Mathis*. 2003. Evaluation of bottom ash and composted manure blends as a soil amendment material. *Bioresource Technology*. 89: 217-228.
30. **Mukhtar, S.**, A. Rose, S. Capareda, C. Boriack, R. Lacey, B. Shaw, and C. Parnell Jr. 2003. Assessment of ammonia adsorption onto teflon and ldpe tubing used in pollutant stream conveyance. *Agricultural Engineering International: the CIGR Journal of Scientific Research and Development*". Manuscript BC 03 012. Vol. V. Paper 29, 1-13.

31. Redwine, J. S*., R. E. Lacey, **S. Mukhtar**, and J. B. Carey. 2002. Concentration and Emissions of Ammonia and Particulate Matter in Tunnel Ventilated Broiler Houses Under Summer Conditions in Texas. Transactions of the ASAE 45(4): 1101-1109.
32. **Mukhtar, S.**, J. L. Baker, and R. S. Kanwar. 1996. Effect of short-term flooding and drainage on soil oxygenation. Transactions of the ASAE 39(3): 915-920.
33. Erbach, D. C., J. G. Benjamin, R. M. Cruse, M. A. Elamin, **S. Mukhtar**, and C. H. Choi. 1992. Soil and corn response to tillage with Paraplow™. Transactions of the ASAE 35(5): 1347-1354.
34. Choudhary, M. R., S. R. Cheema, and **S. Mukhtar**. 1991. Effect of topographic slopes on water distribution and crop yield. Journal of Engineering and Applied Sciences. 10(1,2): 37-41.
35. **Mukhtar, S.**, J. L. Baker, and R. S. Kanwar. 1990. Corn growth as affected by excess soil water. Transactions of the ASAE 33(2): 437-442.
36. **Mukhtar, S.**, J. L. Baker, and R. S. Kanwar. 1990. Soil atmosphere-access chamber and analytical assembly to monitor soil aeration. Soil Science Society of America Journal. 54: 167-172.
37. Kanwar, R. S., **S. Mukhtar**, and P. Singh. 1989. Transient state oxygen diffusion through undisturbed soil columns. Transactions of the ASAE 32(5): 1644-1650.
38. Kanwar, R. S., J. L. Baker, and **S. Mukhtar**. 1988. Growth and yield of corn as affected by excess soil water at various stages of development. Transactions of the ASAE 31(1): 133-141.
39. **Mukhtar, S.**, J. L. Baker, R. Horton, and D. C. Erbach. 1985. Soil water infiltration as affected by the use of the Paraplow. Transactions of the ASAE 28(6): 1811-1816.

* Graduate student or research associate.

TEXAS AGRILIFE EXTENSION PUBLICATIONS

1. **Mukhtar, S** and B. W. Auvermann. 2009. Improving the Air Quality of Animal Feeding Operations with Proper Facility and Manure Management. Texas AgriLife Extension Publication E-585.
2. McGee, R and **S. Mukhtar**. 2009. Air Quality Terminology. R. McGee and **S. Mukhtar**. 2009. Air Quality Terminology. Texas AgriLife Extension Publication. L-5516.
3. McGee, R and **S. Mukhtar**. 2009. Particulate matter. What Is It And Why Does It Matter to Agriculture? Texas AgriLife Extension Publication L-5514.
4. S. Rahman, T. Dvorak, C. Stoltenow and **S. Mukhtar**. 2009. Animal Carcass Disposal Options. North Dakota State University Extension Service Publication NM-1422.
5. **Mukhtar, S.**, C. Nash, W. Harman, and R. Padia. 2008. How Much Does That Incinerator Cost? Texas AgriLife Extension Publication B-6208.
6. **Mukhtar, S.**, B. Goodrich, C. Engler, and S. Capareda. 2008. Dairy Biomass as a Renewable Fuel Source. Texas AgriLife Extension Publication L-5494.

7. Rahman, S., **S. Mukhtar** and R. Wiederholt. 2008. Managing Odor Nuisance and Dust from Cattle Feedlots. North Dakota state University Extension Publication NM-1391.
8. Upadhyay, J. K., B. W. Auvermann, K. J. Bush, and **S. Mukhtar**. 2008. Nitrogen Deposition in the Southern High Plains. Texas AgriLife Extension Publication E-464.
9. **Mukhtar, S.** 2007. Manure Production and Characteristics. Its Importance to Texas and Animal Feeding Operations. Texas AgriLife Extension Publication L-5489.
10. **Mukhtar, S.**, K. Wagner and L. Gregory. 2007. Technologies for reducing nutrients in dairy effluent. Texas AgriLife Extension Publication B-6196.
11. **Mukhtar, S** and S. Capareda. 2006. Manure to Energy: Understanding Processes, Principles and Jargon. Texas AgriLife Extension Publication No. E-428.
12. **Mukhtar, S** and B. W. Auvermann. 2006. Air Quality Standards and Nuisance Issues from Animal Agriculture. Texas AgriLife Extension Publication No. E-401.
13. Auvermann, B. W, **S. Mukhtar**, and K. Heflin. 2006. Composting Large Animal Carcasses. Texas AgriLife Extension Publication No. E-422.
14. **Mukhtar, S.** 2005. Using Compost for Erosion Control and Revegetation. Texas AgriLife Extension Publication E-354.
15. **Mukhtar, S.** and J. Walker (USDA-NRCS). 2002. Closure of Lagoons and Earthen Manure Storage Structures. Texas AgriLife Extension Publication B-6122.
16. **Mukhtar, S.** J. Carey, and R. Lacey. 2001. Managing Nuisance Odors and Dust from Poultry Growing Operations. Texas AgriLife Extension Publication, L-5401.
17. **Mukhtar, S.** 2000. Using Animal Manure and Wastewater for Crops and Pastures: Know and take credit for Your N, P, and K. Texas AgriLife Extension Publication, E-47.
18. **Mukhtar, S.** 1999. Dairy Outreach Program Area Training and Continuing Education. Texas AgriLife Extension Publication, E-14.
19. **Mukhtar, S.**, J. M. Sweeten, and B. W. Auvermann. 1999. Solid-Liquid Separation of Animal Manure and Wastewater. Texas AgriLife Extension Publication, E-13.
20. **Mukhtar, S.** 1999. Proper Lagoon Management to Reduce Odor and Excess Sludge Accumulation. Texas AgriLife Extension Publication, E-9.
21. **Mukhtar, S.** 1998. Water Quality Guide for Livestock and Poultry. Texas AgriLife Extension Publication, E-8.

IOWA STATE UNIVERSITY EXTENSION PUBLICATIONS

1. **Mukhtar, S.** and R. Zhang. 1995. Guidelines for Minimizing Odors in Swine Operations. Iowa State University Extension Publication, Pm-1605.
2. Zhang, R. and **S. Mukhtar**. 1995. Selecting Manure Management Systems for Swine Operations. Iowa State University Extension Publication, Pm-1602.

HANDBOOK

Mukhtar, S., A Kalbasi, B. McCarl, F. O., Boadu, Y. H. Jin., W. B. Shim., T. A. Vestal, and C. L. Wilson. 2008. Managing Contaminated Animal and Plant Materials-Field Guide on Best Practices. Produced for USDA-Animal and Plant Health Inspection Service by Texas AgriLife Extension Service.

INVITED PUBLICATIONS AND BOOK CHAPTERS

1. Jones, D. D., R. K. Koelsch, **S. Mukhtar**, R. E. Sheffield, and J. W. Worley. 2006. Closure of Earthen Manure Structures (Including Basins, Holding Ponds, and Lagoons). In: Animal Agriculture and the Environment: National Center for Manure and Animal Waste Management White Papers. J. M. Rice, D. F. Caldwell, F. J. Humenik, Editors, Pages 263-284. St. Joseph, Michigan: ASABE.
2. Priyadarsan, S., K. Annamalai, B. Thein, J. Sweeten, and **S. Mukhtar**. 2005. Animal Waste as a Source of Renewable Energy. In: Agriculture As a Producer and Consumer of Energy, J. Outlaw, K. Collins and J. Duffield, Editors, Pages 266-282. CAB International, Wallingford, UK.
3. **Mukhtar S.** 2004. Poultry Production: Manure and Wastewater Management. In Encyclopedia of Animal Science, W. Pond and A. Bell, Editors, Pages 744-747. Marcel Dekker, Inc., New York, NY.
4. **Mukhtar, S.**, and P. Haan. 2003. Poultry Manure Management Water Requirements and Utilization. In: Encyclopedia of Water Science, B.A. Stewart and T. A. Howell, Editors, Pages 607-609. Merceel Dekker, New York, NY.
5. **Mukhtar, S.**, S. Feagley, and B. L. Harris. 2000. Animal Waste Management in the Rural South. Publication No. 15. In Millennium Series, The Rural South: Preparing for the Challenges of the 21st Century. Southern Rural Development Center, Mississippi State University.

EDITOR REVIEWED PROCEEDINGS

1. McKee, K., A. Teague, K. Riebschleagar, J. Kaur, R. Padia, B. Sullivan, I. Parker, M. Gallagher, L. Gregory, N. Nictson, M. Berg, D. Debjani, M. McFarland, **S. Mukhtar**, R. Srinivasan and R. Karthikeyan. 2010. Developing watershed protection plans for rural watersheds: Integrating science, policy, and stakeholders. 21st Century Watershed Technologies Conference, ASABE, Earth University, Costa Rica, February 21-24, 2010
2. **Mukhtar, S.**, J. Zhu and S. Borhan. 2009. A field-scale surface aeration system to mitigate odor: A tale of two lagoons. Proc. Texas Animal Manure Management Issues Conference, Round Rock, TX, September 29-30, 2009.
3. **Mukhtar, S.** and S. Borhan. 2009. Evaluation of a weeping wall solid-liquid separation system for flushed dairy manure. Proc. Texas Animal Manure Management Issues Conference, Round Rock, TX, September 29-30, 2009.
4. Gregory, L., **S. Mukhtar** and S. Rahman. 2009. Demonstration and transfer of selected new technologies for animal waste pollution control. Proc. Texas Animal Manure Management Issues Conference, Round Rock, TX, September 29-30, 2009.

5. Engler, C., S. Capareda, **S. Mukhtar**, and B. Goodrich. 2009. Energy use on dairies in the southwestern United States. Proc. Texas Animal Manure Management Issues Conference, Round Rock, TX, September 29-30, 2009.
6. Padia, R., I. Parker, B. Sullivan, **S. Mukhtar**, and R. Karthikeyan. 2009. Occurrence and fate of E. Coli from cattle and wildlife under different environmental conditions. Proc. Texas Animal Manure Management Issues Conference, Round Rock, TX, September 29-30, 2009.
7. **Mukhtar, S.** 2009. Practical Approaches to Improve Air Quality of Animal Feeding Operations with Proper Facility and Manure Management. Proc. First International Symposium on Animal Waste Management - SIGERA. Florianopolis, Brazil. March 11-13, 2009.
8. **Mukhtar, S.**, A. Mutlu and S. Rahman. 2008. Management of Dairy Operations to Prevent Excessive Ammonia Emissions. Proc. Mitigating Air Emissions from Animal Feeding Operations Conference, Iowa State University Des Moines, IA. May19-21, 2008.
9. **Mukhtar, S** and A. Mutlu. 2008. Seasonal Hydrogen Sulfide Emissions from an Open-lot Dairy Operation. ASABE 8Th International Livestock Environment Symposium, Iguassu Falls, Brazil. August 31-September 4, 2008.
10. Carlin, N. T., K Annamalai, J. M. Sweeten, and **S. Mukhtar**. 2007. Utilization of Latent heat Derived from Vaporized Wastewater in High Moisture Dairy Manure Combustion Schemes. International Symposium on Air Quality and Waste Management for Agriculture, Broomfield, Colorado. September 15-19, 2007.
11. **Mukhtar S.**, M. McFarland, C. Wagner, and F. Mazac. 2006. Use of Dairy Manure Compost as Erosion Control Material under Vegetated and Non Vegetated Conditions. 2006 CIGR International Conference, Bonn, Germany. September 3-7.
12. Ullman, J., **S. Mukhtar**, and S. Senseman. 2006. Sorption and Degradation of Estrogenic Compounds in Agricultural Soils: Implications on Hormone Mobility Following Land Application of Animal Manure. 2006 CIGR International Conference, Bonn, Germany. September 3-7.
13. **Mukhtar, S.**, A. Mutlu, S. Capareda, R. Lacey, B. Shaw, and C. Parnell. 2006. Seasonal and Spatial Variations of Ammonia Emissions from an Open-lot Dairy Operation. USDA-CSREES Workshop on Air Quality: State of the Science, Potomac, Maryland, June 5-8, 2006.
14. Priyadarsan, S., K. Annamalai, M. T. Holtzapple, and **S. Mukhtar**. 2004. Co-Firing Coal and Litter Biomass in Fixed Bed Gasifier under Batch Mode Operations. Seventeenth National Heat and Mass Transfer Conference and Sixth ISHMT / ASME Heat and Mass Transfer Conference, Kalpakkam, India, January 5-7, 2004.
15. Ullman, J. L. and **S. Mukhtar**. 2004. Management Practices and Remedial Activities to Reduce Atmospheric Pollutants from Animal Feeding Operations: A State-of- the-Art Review. 2004 CIGR International Conference, Beijing, China, October 11-14.

16. **Mukhtar, S.**, R. E. Lacey, A. J. Rose, C. B. Parnell, and B. W. Shaw. 2003. Ammonia Emissions from Mechanically Ventilated Broiler Houses and a Free-stall Dairy in Central Texas. Proceedings of the California Animal Nutrition Conference, Fresno, California, May 13-14, 2003.
17. Priyadarsan, S, K. Annamalai, M. T. Holtzapple, and **S. Mukhtar**. 2003. Fixed bed gasification studies on chicken litter biomass under batch mode operation. Proceedings of the 5th Annual Electric Power Conference, Houston, TX, March 4-6, 2003.
18. Boriack, C., L. B. Goodrich, C. B. Parnell, **S. Mukhtar**, B. W. Shaw, and R. E. Lacey. 2003. Revised Design of the Total Suspended Particulate (TSP) Sampler. Proceedings of the 2003 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tennessee. January 6-10, 2003
19. Goodrich, L. B., C. B. Parnell, Jr., R. E. Lacey, **S. Mukhtar**, and B. W. Shaw. 2003. Evaluation of the Uses of the Box Model to Determine Emission Fluxes from Area Sources and the Corresponding Modeled Concentrations Using Industrial Source Complex Model. Proceedings of the 2003 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tennessee. January 6-10, 2003
20. Paul, S., R. Srinivasan, P.K. Haan, **S. Mukhtar**, and F. Hambleton. 2002. Bacterial Total Maximum Daily Load (TMDL): A new classification scheme for impaired water bodies of Texas. National TMDL Science and Policy Conference, Water Environment Federation (WEF) [Nov 13 – 15, 2002, Phoenix, AZ].
21. **Mukhtar, S.**, J. G. Mathis, and A. L. Kenimer. 2001. Efficacy of Utilizing Bottom Ash and Composted Manure as a Beneficial Soil Amendment Material. Proceedings of the 18th Annual International Pittsburgh Coal Conference. Newcastle, Australia, December 3-7, 2001.
22. Mathis, J., **S. Mukhtar**, and A. Kenimer. 2001. Leaching and Standing Water Characteristics of Bottom Ash and Composted Manure Blends. Proceedings of the 14th International Symposium on Management and Use of Coal Combustion Products. San Antonio, Texas, 22-25 January 2001. Volume 1, pp. 3-1-12. EPRI, Palo Alto, CA 94523.
23. **Mukhtar, S.** and R. E. Lacey. 1999. Texas Animal Manure Management Issues Web Site: <http://tammi.tamu.edu>. Proceedings of the Texas Animal Manure Management Conference, Austin, Texas, 9-10 September 1999. pp. 121-125.
24. **Mukhtar, S.**, J. L. Baker, and R. S. Kanwar. 1990. Soil Aeration as Affected by Excess Water. Proceedings of the International Agricultural Engineering Conf. and Exhibition, Bangkok, Thailand, 3-6 December 1990. pp. 859-868.

PROFESSIONAL PAPERS

1. **Mukhtar, S.**, A. M. Samani Majd, M. S. Borhan and J. Beseda. 2011. An Investigation of Ammonia Recovery in Liquid Manure Using a Gas Permeable Membrane. ASABE International meeting, Louisville, KY, August 8 -10. ASABE paper No. 11-10852.
2. Jerez, S. B., **S. Mukhtar**, W. Faulkner, K. D. Casey, M. S. Borhan, and R. A. Smith. 2011 Evaluation of Electrostatic Particle Ionization and BioCurtain^(TM) Technologies to

Reduce Air Pollutants from Broiler Houses. ASABE International meeting, Louisville, KY, August 8 -10. ASABE paper No. 11-10550.

3. Stowell, R., C. Powers, J. Harrison, **S. Mukhtar**, M. Risse, and J. Heemstra. 2011. Developing National Extension Capacity to Address Issues Related to Animal Ag's Carbon Footprint. ASABE International meeting, Louisville, KY, August 8 -10. ASABE paper No. 11-11720.
4. Borhan, M. S., S. C. Capareda, **S. Mukhtar**, W. B. Faulkner, R. McGee, C. B. Parnell, Jr. 2011. Comparison of Greenhouse Gas Emissions from Ground Level Area Sources in Dairy and Cattle Feedyard Operations. ASABE International meeting, Louisville, KY, August 8 -10. ASABE paper No. 11-10852.
5. Rahman, S and **S. Mukhtar**. 2010. On-Farm Turkey Carcass Composting Using Sunflower Hulls-based Turkey Litter in North Dakota Climatic Conditions. ASABE International meeting, Pittsburgh, PA, June 20-June 23. ASABE paper No. 10-09022.
6. Borhan, S., S. Capareda, **S. Mukhtar**, W.B. Faulkner, R. McGee, C.B. Parnell, Jr. 2010. Greenhouse Gas Emissions from Ground Level Area Sources in a Dairy Operation. ASABE International meeting, Pittsburgh, PA, June 20-June 23. ASABE paper No. 10-08659.
7. Borhan, S., S. Capareda, **S. Mukhtar**, W.B. Faulkner, R. McGee, C.B. Parnell, Jr. 2010. Measurements of Volatile Organic Compound and Greenhouse Gas Emissions from Ground Level Area Sources in a Beef Feedyard using Isolation Flux Chamber. ASABE International meeting, Pittsburgh, PA, June 20-June 23. ASABE paper No. 10-08657.
8. Abia, T. S., Y. Huang., **S. Mukhtar**. In Situ Iron Oxide Emplacement for Groundwater Arsenic (As) Removal. National Ground Water Association 2010 Annual Groundwater Expo, Las Vegas, NV, December 7-10, 2010.
9. Borhan*, M.S., **S. Mukhtar**, S. Rahman and J. Zhu. 2009. Evaluation of a Low-Cost Surface Aeration System in an Anaerobic Poultry Lagoon. ASABE International meeting, Providence, RI, June 29-July 2. ASABE paper No. 09-5996.
10. Padia*, R., I. D. Parker, B. Sullivan, R. Karthikeyan and **S. Mukhtar**. 2009. Rahman, S., **S. Mukhtar**. 2008. Fate and Transport of *E. coli* in Cedar Creek Watershed, Texas. ASABE International meeting, Reno, NV, June 21-June 24. ASABE paper No. 09-6662.
11. Rahman*, S., **S. Mukhtar**, and J. Zhu. 2008. Fabrication and Performance of a Surface Aeration System to Control Odor from an Anaerobic Poultry Lagoon in Texas. ASABE International meeting, Providence, RI, June 29-July 2. ASABE paper No. 08-4110.
12. Giri, S*, **S. Mukhtar**, and R. Wittie. 2008. Vegetative Covers to Control Sediment and Phosphorus (P) in Runoff From Dairy Waste Application Fields. ASABE International meeting, Providence, RI, June 29-July 2. ASABE paper No. 08-4132.
13. Goodrich, B*, **S. Mukhtar**., C. Engler, S. Capareda. 2008. Energy Use Survey of Dairies in the Southwestern United States. ASABE International meeting, Providence, RI, June 29-July 2. ASABE paper No. 08-4601.

14. Zhu, J., C. F. Miller, C. Dong, X. Wu, L. Wang, and **S. Mukhtar**. 2007. Development of an Aerator Module for Surface Aeration to Control Odor from Liquid Manure Storage Facilities. ASABE International meeting, Minneapolis, MN, June 17-20. ASABE paper No. 07-4054.
15. Giri, S*, **S. Mukhtar** and R. Wittie. 2007. Efficacy of Vegetative Filter Strips to Reduce Phosphorus (P) in Runoff from Dairy Waste Application Fields. 15th National Non-point Monitoring Workshop, Austin, TX, August 27-30, 2007.
16. Rahman*, S., and **S. Mukhtar**. 2007. Efficacy of Microbial Treatment to Reduce Phosphorous and Other Substances from Dairy Lagoon Effluent. 2007 National Conference on Agriculture and the Environment. Agricultural Water Quality alliance. Pacific Grove, CA, November 7-9, 2007.
17. Giri S*., **S. Mukhtar** and R. Wittie. 2007. Efficacy of Different Plant Covers in Sequestration of Phosphorous (P) from Dairy Waste Application Fields. 2007 National Conference on Agriculture and the Environment. Agricultural Water Quality alliance. Pacific Grove, CA, November 7-9, 2007.
18. Goodrich*, B., **S. Mukhtar**, S. Capareda and W. Harmann. 2007. Characterization and Transportation Analysis of Dairy Manure in Texas for Cofiring in Coal-Fired Power Plants. 2007 National Conference on Agriculture and the Environment. Agricultural Water Quality Alliance. Pacific Grove, CA, November 7-9, 2007.
19. Schnell, R., D. Vietor, C. Munster, R. White, M. Tahboub and **S. Mukhtar**. 2007. Cycling of Solids from a Geotube® dewatering System through Turfgrass Sod. American Society of Agronomy Meeting, New Orleans, LA, November 4-8, 2007.
20. **Mukhtar, S.**, A. Mutlu, S. Capareda, R. Lacey, B. Shaw, and C. Parnell. 2006. Seasonal and Spatial Variations of Ammonia Emissions from an Open-lot Dairy Operation. Workshop on Air Quality: State of the Science, Potomac, Maryland, June 5-8, 2006.
21. Lazenby* L., **S. Mukhtar**, C. Gerngross, and K. Wagner. 2006. Evaluation of Selected New Technologies for Animal Waste Management. ASABE International meeting, Portland, OR, July 9-12. ASABE Paper No. 06-4176.
22. Goodrich*, B., **S. Mukhtar**, S. Capareda, and B. Shaw. 2006. Development of a PM10 Emission Factor for Hybrid Dairies. ASABE International meeting, Portland, OR, July 9-12. ASABE Paper No. 06-4164.
23. Mutlu*, A., **S. Mukhtar**, B. Shaw, S. Capareda, R. Lacey, and C. Parnell. 2006. Estimating Seasonal Ammonia Downwind Concentrations from Open-lot Dairy in Central Texas. ASABE International meeting, Portland, OR, July 9-12. ASABE Paper No. 06-4103.
24. Goodrich*, B., S. Capareda, and **S. Mukhtar**. 2006. Analysis of Dairy Biomass Properties for Use in Thermo-Chemical Conversion Technologies. ASABE International meeting, Portland, OR, July 9-12. ASABE Paper No. 06-4184.
25. Goodrich, B., B. Shaw, C. Parnell, S. Capareda, and **S. Mukhtar**. 2006. Evaluation of the Box Model for Emission Factor Development. ASABE International meeting, Portland, OR, July 9-12. ASABE Paper No. 06-4100.

26. Casey, K., D. Parker, J. Sweeten, **S. Mukhtar**, and J. Koziel. 2006. Hydrogen Sulfide Emissions from Beef Feedlots & Dairy Corrals in the Southern Great Plains. ASABE International meeting, Portland, OR, July 9-12. ASABE Paper No. 06-4028.
27. Mutlu*, A., **S. Mukhtar**, S.C. Capareda, C. N. Boriack, B. W. Shaw, R.E. Lacey, and C. B. Parnell. 2005. Summer Ammonia Emission Rates from Free-stall and Open-lot Dairies in Central Texas. Paper presented at the 2005 International meeting of the ASAE, Tampa, Florida. ASAE Paper No. 05-4037.
28. Boriack*, C. N., R. E. Lacey, S. C. Capareda, **S. Mukhtar**, A. Mutlu, B. W. Shaw and C. B. Parnell. 2005. System Response of Ammonia and Hydrogen Sulfide Measurement Equipment. Paper presented at the 2005 International meeting of the ASAE, Tampa, Florida. ASAE Paper No. 05-4038.
29. Boriack*, C. N., R. E. Lacey, **S. Mukhtar**, A. Mutlu, S. C. Capareda, B.W. Shaw, and C.B. Parnell. 2005. Adsorption Kinetics of Ammonia on a Dynamic Isolation Flux Chamber. Paper presented at the 2005 International meeting of the ASAE, Tampa, Florida. ASAE Paper No. 05-4039.
30. **Mukhtar**, S. M. L. McFarland, C. Gerngross, and F. Mazac. 2004. Efficacy of Using Dairy Manure Compost as Erosion Control and Revegetation Material. Paper presented at the 2004 International meeting of the ASAE, Ottawa, Canada. ASAE Paper No. 04-4079.
31. Ullman*, J. L. and **S. Mukhtar**. 2004. Implications on Ammonia Emissions from Dairy Facilities Using Dry-lot Versus Hybrid (Free-stall) Housing Practices. Paper presented at the 2004 International meeting of the ASAE, Ottawa, Canada. ASAE Paper No. 04-4064.
32. Mutlu*, A., **S. Mukhtar**, S.C. Capareda, C. N. Boriack, C. B. Parnell, R.E. Lacey, and B. W. Shaw. 2004. A Process-Based Approach for Ammonia Emission Measurements at a Free-stall Dairy. Paper presented at the 2004 International meeting of the ASAE, Ottawa, Canada. ASAE Paper No. 04-4110.
33. Boriack*, C. N., S. C. Capareda, R. E. Lacey, A. Mutlu, **S. Mukhtar**, B. W. Shaw, and C. B. Parnell. 2004. Uncertainty in Ammonia Local Measurement Systems Using Dynamic Isolation Flux Chambers. Paper presented at the 2004 International meeting of the ASAE, Ottawa, Canada. ASAE Paper No. 04-4111.
34. Capareda*, S.C., C. N. Boriack, A. Mutlu, N. Mameshev, **S. Mukhtar**, B.W. Shaw, R. E. Lacey, and C.B. Parnell. 2004. Recovery of Gaseous Emissions from Low –Level Area Sources of Ammonia and Hydrogen Sulfide Using Dynamic Isolation flux Chambers. Paper presented at the 2004 International meeting of the ASAE, Ottawa, Canada. ASAE Paper No. 04-4113.
35. **Mukhtar**, S., B. W. Auvermann, K. Heflin, and C. N. Boriack. 2003. A Low Maintenance Approach to Large Carcass Composting. 2003. Paper presented at the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03-34106.
36. Rose*, A., **S. Mukhtar**, B. W. Shaw, C. B. Parnell Jr., and R. E. Lacey. 2003. Assessment of Ammonia Adsorption onto Polymer Tubing. Paper presented at the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03- 2185.

37. Parnell, Jr., C. B., **S. Mukhtar**, R. E. Lacey, and B. W. Shaw. 2003. PM Emission Factor for Cattle Feedyards. Paper presented at the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03- 4119.
38. Goodrich*, B., C. B. Parnell Jr., **S. Mukhtar**, R. E. Lacey, and B. W. Shaw. 2003. A Science Based PM₁₀ Emission Factor for Free-stall Dairies. Paper presented at the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03- 4115.
39. Paul*, S., R. Srinivasan, P. Haan, **S. Mukhtar**, and K Neimann. 2003. Bacterial Total Maximum Daily Load (TMDL): Modeling the Effect of Rainfall on the In-Stream Bacterial Concentrations. Paper presented at the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03- 2185.
40. Priyadaran*, S., K. Annamalai, J. Sweeten, M. Holtzapple, and **S. Mukhtar**. 2003. Waste to Energy: Fixed Bed Gasification of Feedlot and Chicken Litter Biomass. Paper presented at the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03-4135.
41. **Mukhtar, S.**, K. Annamalai, B. Thien, and S. C. Porter. 2002. Co-Firing of Coal and Broiler Litter (BL) Fuels for Power Generation: BL Fuel Quality and Characteristics. Paper presented at the 2002 International Meeting of the ASAE, Chicago, Illinois. ASAE Paper No. 02-4189.
42. Goodrich*, B. L., C. B. Parnell, and **S. Mukhtar**. 2002. Dairy Emission Factors for PM₁₀. Paper presented at the 2002 International Meeting of the ASAE, Chicago, Illinois. ASAE Paper No. 02-4214.
43. Paul*, S., P. Haan, M. Matlock, and **S. Mukhtar**. 2002. Analysis of the HSPF Model for Predicting In-Stream Fecal Coliform Concentrations. Paper presented at the 2002 International Meeting of the ASAE, Chicago, Illinois. ASAE Paper No. 02-2157.
44. Paul*, S., R. Srinivasan, P. Haan, **S. Mukhtar**, and K. Neimann. 2002. Bacterial Total Maximum Daily Load (TMDL): A New Classification Scheme for Impaired Water Bodies of Texas. 2002 National TMDL Science and Policy conference at Phoenix, Arizona, Paper No. 10E. Alexandria, Va.: WEF.
45. **Mukhtar, S.**, J. L. Ullman, B. W. Auvermann, S. E. Feagley, and T. Carpenter. 2001. Nutrient and Sludge Assessment of Dairy Lagoons in Central Texas. Paper presented at the 2001 International Meeting of the ASAE, Sacramento, California. ASAE Paper No. 01-2278.
46. Mathis*, J. G., **S. Mukhtar**, and A. L. Kenimer. 2001. Leachate and Standing Water Characteristics of Dairy Manure and Bottom Ash Blends. Paper presented at the 2001 International Meeting of the ASAE, Sacramento, California. ASAE Paper No. 01-2284.
47. **Mukhtar, S.**, S. Sadaka, A. Kenimer, and J. Mathis. 2000. Evaluation of Bottom Ash and Composted Dairy Manure as a Fill Material. Paper presented at the 2000 International Meeting of the ASAE, Milwaukee, Wisconsin. ASAE Paper No. 00-4125.
48. **Mukhtar, S.**, J. L. Baker, and R. S. Kanwar. 1994. Effect of Short-Term Flooding on Soil Oxygenation. Paper presented at the 1994 International Winter Meeting of the ASAE, Atlanta, Georgia. ASAE Paper No. 94-2623.

49. Kanwar, R. S., **S. Mukhtar** and P. Singh. 1989. Non-Steady Diffusion of Oxygen Above the Water Table. Paper Presented at the 1989 International Summer Meeting of the ASAE/CSAE, Quebec City, Quebec, Canada. ASAE Paper No. 89-2097.
50. **Mukhtar, S.**, J. L. Baker, and R. S. Kanwar. 1988. Soil Aeration and Crop Growth in Response to Excess Water. Paper Presented at the 1988 International Winter Meeting of the ASAE, Chicago, Illinois. ASAE Paper No. 88-2611.
51. **Mukhtar, S.**, R. Horton, J. L. Baker, and D. C. Erbach. 1984 Effects of Time and Tillage on Soil Water Infiltration. Paper Presented at the 1984 Mid-Central Region Meeting of the ASAE, St. Joseph, Missouri. ASAE Paper No. MCR-84 -160.

White Papers

1. Wheeler, E. F., D. Meyer, P. Martin, D. Schmidt, W. Powers, **S. Mukhtar** and 10 other contributing authors. 2010. Recommended Units and Supporting Data for Standardized Reporting of Air Emissions from Animal Agriculture. A white paper submitted to the USDA- NRCS Agricultural Air Quality Task Force.
2. Sweeten, J., B. Auvermann, **S. Mukhtar**, N. Cole, R. DeOtte, D. Parker, B. Weinheimer, K. Casey, C. Parnell, R. Todd, B. Shaw and J. Upadhyay. 2007. Natural Resource Management: Air Quality, Water Quality & Manure Management. High Plains Livestock 2027. Shaping the Future of Food Animal Production. Amarillo Civic Center, September 5-6, 2007.
3. Parker D., K. Casey, A. Cole, J. M. Sweeten, B. W. Auvermann, M. Rhodes, **S. Mukhtar**, R. Todd, C. Rogers, J. Silva, T Moss, C. Ponce, R. Pulikanti, and J. Glidden. 2005. Hydrogen Sulfide Emissions from Open-lot Beef Cattle Feedyard Pens and Ponds. A white Paper Prepared for Presentation to the Industry Advisory Committee of the USDA-CSREES Federal Air Quality Initiative, December 2005.
4. Capareda, S., **S. Mukhtar**, B. W. Shaw, and C. B. Parnell, Jr. 2005. Highly Reactive Volatile Organic Compound (HRVOC) Emissions from CAFOs. Center for Agricultural Air Quality Engineering and Sciences (CAAQES). Biological and Agricultural Engineering Department, Texas A&M University, College Station, Texas. March 15, 2005.
5. Jones, C. A., et al. (**S. Mukhtar** and several other co-authors from the Texas A&M System) 2003. Standards for Waste Retention Facilities in the North Bosque River Watershed. White paper submitted to Dr. R. Mack Gray, USDA Deputy Undersecretary for Natural Resources and Environment, and the Honorable Chet Edwards (D-Waco), September 15, 2003.
6. Jones, C. A., et al. (**S. Mukhtar** and several other co-authors from the Texas A&M System) 2003. Management of Dairy Waste Application Fields in the North Bosque River Watershed. White paper submitted to Dr. R. Mack Gray, USDA Deputy Undersecretary for Natural Resources and Environment, and the Honorable Chet Edwards (D-Waco), September 15, 2003.

GRANTS AND CONTRACTS

1. Co-PI (PI, Richard Stowell, University of Nebraska) on National Facilitation of Extension Programming in Climate Change Mitigation and Adaptation for Animal Agriculture. USDA-National Institute of Food and Agriculture (NIFA). \$4,290,000. 2011-2016.
2. PI on Evaluation of Electrostatic Particle Ionization and Biocurtain[®] Technologies to Reduce Dust, Odor and other Pollutants from Broiler Houses. Texas State Soil and Water Conservation Board (TSSWCB). \$169,624. 2010-2011.
3. Co-PI on Research, Education and Extension Program for Sustainable Manure Management Practices-Learning from the Belgian Model. USDA/CSREES International Science and Education (ISE) grant. \$149,999. 2009-2012.
4. Co-PI on Preparing Underrepresented Scholars For Challenges in Agricultural Biosecurity and Sustainability – A Research and Leadership PhD Program. USDA-CSREES grant. \$229,500. 2008-2012.
5. PI on Assembly and Testing of an On-Farm Manure to Energy Conversion System BMP For Animal Waste Pollution Control. USDA-NRCS, CIG grant. \$68,570. 2007- 2008.
6. Co-PI on Renewable Energy and Environmental Stability Using Biomass from Dairy and Beef Animal production. Texas Agricultural Experiment Station (TAES) Federal Hatch Initiative. \$200,000. 2007- 2008.
7. Co-PI on Fate and Transport of *E. coli* in Rural Texas Landscapes and Streams. EPA 319 grant administered by the Texas State Soil and Water Conservation Board (TSSWCB). \$281,867. 2007- 2010.
8. PI on A National Learning Center for Animal Agriculture Waste Quality Issues. Sub contract with University of Nebraska on a USDA-CSREES grant. \$7,500. 2007-2008.
9. Co-PI (PI on Texas A&M portion) on A Field-Scale Aeration System To Control Odor From Open Liquid Manure Storage Facilities. USDA-NRI Program. \$484,284. 2005-2008.
10. Co-PI on Renewable Energy And Environmental Sustainability Using Biomass From Dairy And Beef Animal Production Facilities. US-DOE. \$992,000. 2005- 2006.
11. PI on Best Practices and Guidelines for Contaminated Plant And Animal Disposal. Technical Support Working Group, US-Dept. of Defense. \$225,799. 2005-2006.
12. Co-PI on Strategies for Management and Subsequent Reduced Surface Water Phosphorus Runoff from Dairies in the North Bosque and Leon Watersheds. USDA-CSREES National Integrated Water Quality Program. \$582,478. 2004-2008.

13. Co-PI on Phytoremediation of Excessively High Phosphorus Soils and Subsequent Reduced Phosphorus Runoff into the North Bosque River. EPA 319 grant administered by the TSSWCB. \$238,959. 2004-2007.
14. Co-PI on Development of On-line Nutrient Management Certification Course for Technical Service Providers for CAFOs. USDA-CSREES National Integrated Water Quality Program. \$299,983. 2004-2006.
15. PI on Demonstration and Transfer of Selected New Technologies for Animal Waste Pollution Control. EPA 319 grant administered by the TSSWCB. \$401,129. 2003-2007.
16. Co-PI on Carcass Disposal Working Group Project. Subcontract of the National Agricultural Biosecurity Center Consortium. USDA-Animal and Plant Health Inspection Service (APHIS). \$268,453. 2004-2005.
17. Co-PI on A Novel Approach of Feedlot Manure as Reburn Fuel for NO_x Reduction in Existing Coal Fired Plants. National Center for Manure and Animal Waste Management, North Carolina State University. \$34,000. 2003-2004.
18. PI on Demonstration of Real-Time Monitoring Systems to Increase the Intensity of Lagoon Management and to Reduce Water Pollution From Overflows and Illegal Discharges. Texas Water Resources Institute (TWRI). \$10,000. 2003.
19. Co-PI on Marketing Composted Manure to Public Entities. Texas Commission on Environmental Quality (TCEQ) Contract No. 582-2-44407. \$824,094. 2002-2006.
20. Co-PI on Air Quality: Odor, dust, and gaseous emissions from concentrated animal feeding operations in the southern Great Plains. USDA-CSREES Project 06-502525-8904. \$4,696,265. 2002-2008.
21. Co-PI on Co firing Coal: Feedlot and Litter Biomass Fuels Pulverized in a Fuel and Fixed Bed Burners. U.S. DOE. \$149,965. 2000-2002.
22. PI on Model certification training program for operators of confined feeding operations. USDA-CSREES (sub contract from Purdue University). \$11,169. 2001-2004
23. Livestock carcass composting demonstration project, Elgin, Bastrop County. Funded by Institute of Food Science and Engineering (IFSE), TAMU. \$5,000. 2001-2002.
24. Co-PI on Odor Abatement and Emissions Inventories from Agricultural Operations. Funded by Agricultural Air Quality Legislative Initiative. \$700,000. 1999-2003.
25. Co-PI on Odors and arsenic emissions from poultry growing operations. TCEQ. \$100,000. 1999-2000.
26. Co-PI on Developing a risk-based approach to watershed level, non point source modeling of fecal coliform pollution for total maximum daily load estimates. TWRI. \$25,000. 1999-2000.

PROJECT REPORTS

1. Zhu, J., and **S. Mukhtar**. 2010. A Field-Scale Surface Aeration System to Control Odor from Open Liquid Manure Storage Facilities. USDA-NIFA Award number: 2006-55112-16639.

2. **Mukhtar, S.**, S. Capareda and C. Engler. 2010. Assembly and testing of on-farm manure to energy conversion system BMP for animal waste pollution control. USDA-NRCS Agreement number 68-7442-7-480.
3. **Mukhtar, S.**, L. Gregory, and K. Wagner. 2009. Demonstration and Transfer of Selected New Technologies for Animal Waste Pollution Control. Texas State Soil and Water Conservation Board (TSSWCB). Section 319, EPA TSSWCB Project # 03-10.
4. **Mukhtar, S.**, W. B. Shim, F. Boedu, C. Wilson, and Others. 2008. Best practices and guidelines for contaminated plant and animal disposal. Final Report Submitted to Department of Defense, Washington, D.C. Contract No. W9ICRB-05-C-0026.
5. Muir, J., **S. Mukhtar**, R. Wittie, and D. Weindorf. 2008. Phytoremediation of Excessively High Phosphorus Soils and Subsequent Reduced Phosphorus Runoff into North Bosque River. Final Report. Submitted to the Texas State Soil and Water Conservation Board, Temple, Texas. Project No. 04-10.
6. **Mukhtar, S.**, M.L. McFarland, C.A. Wagner and B.L. Harris. 2007. Use of Dairy Manure Compost as Erosion Control Material Under Vegetated and Non Vegetated Conditions. Final Report. Submitted to the Texas Commission on Environmental Quality, Austin, Texas. Grant No. 582-2-44407
7. Annamalai, K., J. Sweeten, **S. Mukhtar**, S. Arumugam, and S. Priyadarsan. 2005. A Novel Approach of Feedlot Manure as Reburn Fuel for NO_x Reduction in Existing Coal Fired Plants. Final Report. Submitted to the National Center for Manure and Animal Waste Management, North Carolina. Grant No. 93-36200-8701.
8. **Mukhtar, S.** 2004. Real-Time Monitoring Systems to Increase the Intensity of Lagoon Management and to Reduce Water Pollution From Overflows and Illegal Discharges. Submitted to the Texas Water Resources Institute (TWRI).
9. **Mukhtar, S.**, B. Auvermann and other PIs from Kansas State University and Purdue University. 2005. Carcass Disposal: A Comprehensive Review. USDA-APHIS Project Final Report. The full report (700 pages) is available at: <http://fss.k-state.edu/research/books/carcassdisp.html> (accessed 1/18/2005)
10. Annamalai, K., J. Sweeten, **S. Mukhtar**, B. Thien, G. Wei, S. Priyadarasm 2003. Co-Firing Coal, Feedlot, and Litter Biomass (CFB and LFB) Fuels in Pulverized Fuel and Fixed Bed Burners. Report Submitted to the Department of Energy. DOE Grant No. DE-FG-26-00NT40810.
11. Paul, S., M. Matlock, P. Haan, **S. Mukhtar** and S. Pillai. 2002. Uncertainty Analysis as a First Step of Developing a Risk-Based Approach to Non-point Source Modeling of Fecal Coliform Pollution for Total Maximum Daily Load Estimates. Technical Report No. 192. Submitted to the Texas Water Resources Institute (TWRI), The Texas A&M University. TWRI Grant No. HQ-96-GR-02700-AGEN-99-1.
12. Carey, J., R. Lacey, and **S. Mukhtar**. 2000. Study of Odors and Arsenic Emissions from Poultry Operations. Final Report Submitted to TCEQ. TCEQ Contract No. 582-0-81252.

PROPOSAL AND PROGRAM REVIEWS

- Ad Hoc Reviewer, for one USDA-National Institute of Food and Agriculture (NIFA) Small Business Innovation Research (SBIR) Program proposal. Review submitted on-line on February 10, 2011.
- Ad Hoc Reviewer, for one USDA-NIFA SBIR Program proposal. Review submitted on-line on May 22, 2011.
- Reviewed USDA-CSREES SBIR Proposals in January, 2010 and served on the panel in February, 2010.
- Reviewed USDA-CSREES SBIR in February and May, 2009 and served on the panel in February, 2009.
- Reviewed USDA-ARS National Program 206: Manure and Byproduct Utilization. July 2008. Served on the team to develop recommendations in a comprehensive report to the National Program Manager.
- Reviewed USDA-CSREES NIWQP Regional Water Resources Projects proposals and served on the panel. June 2008.
- Ad-hoc Reviewer for the USDA-CSREES Small Business Innovation Research proposal. 2008.
- Reviewed Missouri Life Science Research Board proposals. 2007.
- Manager, USDA-CSREES National Integrated Water Quality Program (NIWQP) proposals reviewers' panel, Washington DC. June 2005.
- Reviewed USDA-CSREES NIWQP proposals and served on the selection panel in Washington DC. May 2002 and June 2003.
- Reviewed USDA-NRI proposals and served on the selection panel, Washington DC. April, 2001 and 2004.

INVITED PRESENTATIONS

1. Three invited presentations were made on a) manure storage and treatment structure design for EPA's no discharge requirements, b) lagoon management, and c) lagoon closure and post closure requirements During the USEPA Region 6 CAFO Enforcement Workshop. Addison, TX. January 10, 2011.
2. Animal Agriculture and Urban Water Quality: Concerns and Solutions. An invited presentation at the 2011 World Water Day International Seminar held at the University of Agriculture, Faisalabad, Pakistan. March 19, 2011.
3. Fate and Transport of *E. coli* in Rural Texas Landscapes and Streams. An invited presentation at the 2011 Texas Watershed Coordinator Roundtable on "Bacteria Dynamics, Assessment Methods, and BMPs." In Austin, Texas. Texas Water Resources Institute. July 27, 2011.
4. Technical Issues of Digester Integration into an Energy/Nutrient Management System and Cogeneration. An invited presentation at the Virtual Renewable Energy Education

Field Day. A webinar hosted by the Farm Foundation, Las Cruces, NM. October 26, 2011.

5. Future of Extension Programming through eXtension. An invited presentation and panel for this Educational session at the 2010 International ASABE Meeting, Pittsburgh, PA. June 22, 2010.
6. Rules and Recommendations for Carcass Disposal. Invited presentation to ranchers and livestock producers at the 2010 Value Added Market Cows Workshop in Sulphur Springs. July 9, 2010.
7. Feedlot Emissions: Air quality standards, science and mitigation practices. Invited presentation to USDA-NRCS and USEPA personnel, producers and manure treatment technology vendors at the 2010 Annual Technology Summit of the Farm Pilot Project Coordination Inc., St. Petersburg, Florida. August 26, 2010.
8. Air Quality Up-date and Discussion. An On-line Presentation Made to Montana Department of Environmental Quality, USDA-Natural Resources Conservation Service, and other State Agency Personnel at the Montana AFO/CAFO Roundtable Held in Billings, Montana, January 12, 2010.
9. Nutrient Management Training of EPA and State Regulatory Agencies Personnel. Five Modules on Beef Production Systems, Dairy Production Systems, Manure Characteristics, Storage and Treatment Volumes and Mortality Management of Animal Feeding Operations in the USA Were Taught to Trainees From All EPA Regions and Several State Regulatory Agencies. Kansas City, February 2-4, 2009.
10. Animal Waste Characteristics, Air Quality and Animal Carcass Management were presented at the Iowa State University National Comprehensive Nutrient Management Plan Development Course for Technical Service Providers to Animal Feeding Operations. Des Moines, IA. April 6-8, 2009.
11. Mitigating Emissions from Storage and Treatment. Western dairy Air Quality Symposium 2009. Albuquerque, New Mexico. April 16, 2009.
5. Practical Approaches to Improve Air Quality of Animal Feeding Operations with Proper Facility and Manure Management. First International Conference on Animal Waste Management (I Sigera), by EMBRAPA Suínos e Aves (Brazil Agriculture Research Service) Florianopolis, Brazil. March 11-13, 2009.
6. Ammonia and Hydrogen Sulfide Emissions from Texas Dairies. 2008 Texas Section ASABE Meeting in New Braunfels, TX. October 9, 2008.
7. Hydrogen Sulfide: How Serious an Outdoor Air Quality Concern? Live webcast hosted by the National Livestock and Poultry Learning Environment Learning Center, University of Nebraska. September 19, 2008.

8. Practices for Reducing Ammonia and Hydrogen Sulfide Emissions from Dairy Operations. Oregon Dairy Air Task Force, Oregon Department of Environmental Quality. A 3-hr session conducted remotely from Texas using telephone and internet technology. February 19, 2008.
9. Animal Waste Characteristics, Design and Evaluation of Manure Storage and Treatment Systems, for Animal Feeding Operations. Iowa State University National Comprehensive Nutrient Management Plan Development Course for Technical Service Providers to Animal Feeding Operations. Louisville, Kentucky, February 25-26, 2008.
10. Texas Studies on Manure to Energy Conversion Potential from Dairy and Beef Cattle Biomass. Energy Production from Manure Workshop, USDA-CSREES Southern Regional Water Quality Program. Fayetteville, Arkansas, October 15, 2007.
11. Emergency Mortality Management: A general Overview. Office of Emergency Management, San Antonio, Texas, January 31, 2007.
12. Animal Waste Characteristics, Design and Evaluation of Manure Storage and Treatment Systems, and Air Quality Improvement Technologies For Animal Feeding Operations. Iowa State University and USDA-NRCS National Comprehensive Nutrient Management Plan Development Course for Technical Service Providers to Animal Feeding Operations. Arlington, Texas, February 26-28, 2007.
13. Determination of Ammonia Emissions from Ground Level Area Sources (GLAS) of an Open-lot Dairy. Western Dairy Air Quality Symposium, Las Vegas, Nevada. March 21-22, 2006.
14. Uses of Poultry Manure for Soil Conditioning and Nutrient Management. Presentation at the 19th Poultry Congress of Central America and the Caribbean. San Salvador, El Salvador. August 25, 2006.
15. Current Animal Feeding Operations (CAFO) Related Research. Texas Commission on Environmental Quality (TCEQ), CAFO Investigator Training, College Station, Texas. October 19, 2006.
16. CAFO Ammonia Emissions and the EPA Air Quality Consent Agreement: A National Issue with Local Implications. Texas Commission on Environmental Quality, Annual Water Quality Training, San Antonio, Texas, December 1, 2005.
17. Broiler Litter to Energy: Litter Fuel Quality and Characteristics. Rural Alliance for Renewable Energy Development Forum and Expo, hosted by Texas Renewable Energy Industry Association. Nacogdoches, Texas, September 9, 2005.
18. Technical Fundamentals of Manure Generation and Manure Storage Capacity for CAFOs to Permit Writers and Inspectors. USEPA Office of Compliance and Office of Wastewater Management. EPA Region 6 states. Dallas, Texas, April 1, 2005.
19. A Process Based Approach to Measure Ammonia from Dairy Operations Using a Flux Chamber Protocol. Livestock Emissions Research Symposium, California Air Resources Board, San Joaquin Valley Air Pollution Control District, Fresno, California, January 26, 2005.

20. Air and Water Quality Management of Manure and Wastewater from AFOs, 2004 NPDES CAFO Inspector Training, Oklahoma Department of Agriculture, Food and Forestry, Oklahoma City, OK, November 30, 2004.
21. Ammonia Emissions from Mechanically Ventilated Broiler Houses and a Free-stall Dairy in Central Texas. California Animal Nutrition Conference, Fresno, California, May 13-14, 2003.
22. Ammonia emissions: The Free-stall Dairy Experience. USDA-NRCS South Central Region Air Quality Workshop, Ft. Worth., Texas, May 6-7, 2003.
23. Present and Future Regulatory Issues in Texas. American Dairy Science Association Discover Conference On 'Nitrogen Losses to the Atmosphere from Livestock and Poultry Operations, April 28-May 1, 2002. Nashville, Indiana.
24. Proper Lagoon Management to Reduce Odors and Sludge Accumulation. National Association of Institutional Agribusiness (NAIA) Conference, Houston, Texas, September 28, 1999.

GRADUATE STUDENT COMMITTEES AND RESEARCH ASSOCIATE/ENGINEER SUPERVISION

- Major Professor or Co-Chair of 6 M.S., 5 Ph. D. Students, and Committee Member of 1 Ph.D. and 12 M.S. Students since 1999.
- Graduated 5 M.S. and 4 Ph.D. Students since 2002.
- Supervised 1 Post Doc. Research Associate (1999-2000)
- Supervised 1 Associate Research Engineer (2003-2004)
- Supervised 1 Associate Research Engineer (2005-2006)
- Supervised 1 Post Doc. Research Associate (2007-2008)
- Supervised 1 Post Doc. Research Associate (2008-2010)
- Supervised 1 Assistant Research Engineer (2005-2008)
- Supervised 4 graduate and 12 Undergraduate Student Technicians (1999-present).

STUDENT ADVISING

- Advisor, Agricultural Systems Management /Agricultural Engineering Seniors' Design Project (2002-2009)
- Senior Advisor, Pakistani Students Association, Texas A&M University (2007-present)
- Senior Advisor, Undergraduate Student Club, American Society of Agricultural and Biological Engineers (ASABE), Texas A&M University (2000-2001)
- Junior Advisor, Undergraduate Student Club, American Society of Agricultural and Biological Engineers (ASABE), Texas A&M University (1999-2000)

TEXAS AGRILIFE EXTENSION SERVICE SPECIALISTS ASSOCIATION

- Parliamentarian for Extension Specialists' Association (2005-2007)
- Chapter Director for Extension Specialists' Association (2000-2001)

PROGRAM AND INITIATIVE COMMITTEES

International

- Member, Planning Committee for the 2011 International Symposium on Agricultural and Agroindustrial Waste Management. II SIGERA. Iguassu Falls, Brazil. March 15-17, 2011. (2010-2011)

National and Regional

- Member, ASABE Gunlogson Countryside Engineering Award committee (July, 2010-present)
- Member, Project Leadership Team, The Livestock and Poultry Environmental Learning Center: A National Network Connecting Experts With Those Assisting Producers (2009-Present)
- Program Chair, Air Quality Section of the 2010 Air Quality and Manure Management for Agriculture Symposium, Dallas, September 13-16, 2010 (2008-2010)
- Technical Session Moderator, Livestock Environment, Eight International Symposium of the ASABE, August 31-September 4, 2008, Iguassu Falls, Brazil.
- Team Leader for the National Livestock and Poultry Environment Learning Center Manure and Mortality Management Team (2007-2010)
- Proceedings Chair, 2007 International ASABE Conference on Animal Waste Management, September 15-19. Boulder, Colorado.
- Member, Southern Great Plains Dairy Consortium of four States (Arizona, New Mexico, Oklahoma and Texas), Established to Meet the Educational and Research Needs of the Dairy Industry in the Region (2006-present)
- USDA-APHIS, National Carcass Disposal Working Group (2006-present)
- USDA-NIFA Committee on Beneficial utilization of carcasses (2006-present)
- Member, Dairy Environmental National Task Force, National Milk Producers Federation's Scientific Advisory Committee (2005-2006)
- USDA-NIFA National Integrated Water Quality Program for Southern Region, State Contact for Waste Management (2002-present)
- USDA-NIFA S-1032 (S-1000 prior to 2007) Regional Coordination Committee Animal Manure and Waste Utilization, Treatment, and Nuisance Avoidance for

Sustainable Agriculture. Secretary 2007-08, Vice Chair 2008-09, Chair 2009-10 (2000-present)

- Texas AgriLife Extension Designee for the USDA-National Animal Waste Initiative (2003-present)
- Member ASABE, T-09. Environmental Quality Coordinating Group, Secretary (2001-2002), Program Chair (2002-2003), Vice Chair (2003-2004), Chair (2004-2005)
- Member ASABE, P-161, Student Environmental Design Competition Committee (2001-2003)
- Member ASABE, SE-305, Environmental Air Quality Committee (2002-Present)
- Member ASABE, SE-263, Land Application of Waste Committee. (1999-present).
- Member ASABE, SE-412, Agricultural Waste Management Committee (1999-present)

State of Texas and Texas A&M System

- Member College of Ag. & Life Sciences and Texas AgriLife Peer Review Committee for Faculty Promotion and Tenure. June 2011-Present.
- Member, Texas Water Resources Institute's Program Development Committee for the Lone Star Healthy Streams (LSHS) Program. (2010-present)
- Member, 2010 TAMU College of Agriculture and Life Sciences Committee on Extension Education Engagement. (2010)
- Chair, 2009 Texas Animal Manure Management Issues Conference, Austin, Texas. September, 20-30, 2009 (2008-2009)
- Member, College of Ag and Life Sciences, Texas A&M University Search Committee for the Position of Professor and Head, Biological and Agricultural Engineering (BAEN) Department (2009-2011)
- Member, Texas Animal Health Commission (TAHC) Carcass Disposal Group (2009-present)
- Member, Animal Science Department Search Committee for Extension Dairy Specialist and Assistant Professor Position (2007-2008)
- Member, Texas AgriLife Extension iTeam for eXtension, Extension on the web (2007-present)
- Member, Tarleton State University Dairy Complex Planning Group (2006-2011)
- Member National Center for Foreign Animal and Zoonotic Disease Defense (FAZD) Mass Carcass Management Workshop Planning Group (2006)
- BAEN Advisory Committee (2009-present)
- BAEN Department Search Committee for Associate Professor Position-Impaired Water Treatment Technologies Engineer (2005-2006)

- BAEN Department Ad Hoc Committee on the Promotion and Tenure Process (2005-2006)
- BAEN Department Recognition and Events Committee (2005-present, Chair 2007-present)
- BAEN Department Space Utilization Committee (2002-2008)
- BAEN Department Graduate Program Committee (2000-present)
- BAEN Department Recruiting and Placement Committee (1998-1999)
- BAEN Department Search Committee for Extension Water Resources Specialist Position (2002)
- Texas Community Futures Forum Waste Management Issues \$Waste to \$Worth Response Team (Co-Chair, 2000-2001)
- Member, Texas Commission on Environmental Quality (TCEQ) Agricultural Stakeholders Group (2000-present)
- BAEN Department Search Committee, Environmental Engineer Position (1999)
- Texas Manure Management Issues Group (Chair 1998-2000)
- Chair, Texas Animal Manure Management Issues Conference, Austin, Texas, September, 1999. (1998-1999)
- Agricultural Air Quality Task Force Member (1998-2002)
- Agricultural Pollution Prevention Work Group (1998-2000)

Iowa State University

- Managing Livestock for Competitiveness and Environmental Quality Committee.
- Management of Natural Resources for Sustainable Agriculture and Communities Group.
- University Extension Diversity Committee.

AWARDS AND HONORS

National Excellence in Multistate Research Award, Experiment Station Committee on Organization and Policy (ESCOP), June 2011. (USDA-NIFA Multistate Research Committee S-1032)

The Livestock and Poultry Environmental Learning Center Community of Practice (web-based educational program) was named Outstanding Community of Practice for by National eXtension Team Award. Eight member Leadership Team included faculty from Rutgers, University of Georgia, and University of Nebraska, Texas AgriLife Extension, Washington State University, and Montana State University. June 2011.

Regional Excellence in Multistate Research Award, Southern Association of Agricultural Experiment Station Directors, April 2011. (USDA-NIFA Multistate

Research Committee S-1032).

The 2010 American Society of Agricultural and Biological Engineers (ASABE) G. B. Gunlogson Countryside Engineering Award for outstanding achievements and leadership through extension education and cutting-edge research in environmental quality management of animal production operations. June, 2010.

The 2010 Texas Commission on Environmental Quality (TCEQ) Texas Environmental Excellence Award in Agriculture. Team included members from Texas AgriLife Research, Texas AgriLife Extension Service, West Texas A&M University, Kansas State University, and USDA-Agricultural Research Service, Amarillo, TX. May 2010.

Regional Excellence in Multistate Research Award, Southern Association of Agricultural Experiment Station Directors, April 2010. (USDA-NIFA Multistate Research Committee S-1032).

Excellence in Extension Education Award. Biological and Agricultural Engineering Department, Texas A&M University. April, 2010.
ASABE Educational Aids Blue Ribbon Award in the Comprehensive Publication category for Publication Entitled, 'Managing Contaminated Animal and Plant Materials. Field Guide on Best Practices.' June, 2009.

Texas A&M AgriLife Vice Chancellor's Award in Excellence, January 2009. In recognition of outstanding contribution and performance as a member of "Air Quality: Reducing Feedlot Emissions Research Team."

Texas AgriLife Extension Service--Superior Service Award, January 2008. Commendation for developing effective waste management education programs that successfully improve the profitability of dairy and poultry producers and their ability to fully comply with environmental regulations.

Iowa State University Extension--New Professional Award, November 1997. To recognize new professionals for making significant contributions in their field of expertise to achieve the goals of ISU Extension.

Iowa State University Extension--Achievement Award, November, 1997. In recognition for outstanding Extension effort in Conservation Reserve Program (CRP) options demonstration.

Iowa State University Extension--Achievement Award, November, 1996. In recognition for outstanding Extension effort in carbon monoxide awareness programming.

Governor's Citation, 1996. For service as member of the Clarke County Sesquicentennial Commission of the State of Iowa, 1995-1996.

United States Department of Agriculture--Certificate of Merit, November, 1992. Superior Accomplishment for work done on Soap Creek Watershed.

PROFESSIONAL AND HONORARY SOCIETIES

- American Society of Agricultural and Biological Engineers (1994-95 Awards committee, Iowa section)
- Gamma Sigma Delta (Honor Society of Agriculture)

INTERNATIONAL FACULTY AND STUDENT TRAINING/HOSTING

- Dr. Airton Kunz, Research Scientist, Swine and Poultry National Research Center, Brazilian Agricultural Corporation Embrapa. Concordia, Brazil. June 25-June 29, 2010.
- Ms. Karolina Augusto, Visiting Ph.D. scholar from University of Campinas, Brazil. January –March, 2009.
- Ms. Ellen Fukayama, Visiting Ph.D. scholar from UNESP (State University of Sao Paulo), Brazil. April-May, 2008.
- Dr. Naveen Patni, Agricultural Engineer and Research Scientist from Canada. November 15, 2002.
- Faculty trainer for Dr. T. Sivaraman, Assistant Professor, Dept. of Livestock and Production Management, Madras Veterinary College, Chennai, India. March 19-June 18, 2001.
- Dr. Wayne F. Truter, Department of Plant Production and Soil Science, University of Pretoria, South Africa. October 31-November 2, 2001.

PROFESSIONAL AND PERSONAL DEVELOPMENT

- International Conference on Environmental Odour Monitoring and Control, NOSE2010. Florence, Italy. 2010. Sponsored by the Italian Association of Chemical Engineering.
- American Society of Agricultural and Biological Engineers (ASABE) International Symposium on Air Quality and Manure Management for Agriculture, Dallas, Texas. 2010.
- American Society of Agricultural and Biological Engineers (ASABE) International Meetings (1999-2010)
- ASABE Continuing Professional Development Course on 'Livestock and Poultry Odors', Sacramento, California. 2001
- Texas Extension Specialists Association Meetings (1999-2000, 2004-2007, 2009-2010)
- Iowa Pork Producers Association and National Pork Producer Council. Certificate of Completion for the 'Environmental Assurance Program.' Des Moines, Iowa. 1998
- ASABE Continuing Professional Development Course on 'Measuring and Quantifying Odors', Minneapolis, Minnesota. 1997

- ASABE. Continuing Professional Development Course on 'Seven Habits of Highly Effective People', Summary Workshop, Minneapolis, Minnesota. 1997
- ASABE International Meeting, Atlanta, Georgia. 1994
- USDA-Soil Conservation Service (NRCS). Certificate of Completion for the 'Engineering-Concrete Design Course, Fort Worth, Texas. 1993
- USDA-Soil Conservation Service (NRCS). Certificate of Completion for the 'Managing for Excellence' Training Course, Kansas City, Missouri. 1992
- Quality Management Resources, Inc. Certificate of Completion for the 'Effective Presentation and Instruction' Training Course Conducted for USDA-NRCS, Des Moines, Iowa. 1991
- Troxler Electronic Laboratories, Inc. Certification of Completion for the 'Use of Nuclear Testing Equipment' Training Course Conducted for the USDA-NRCS, Des Moines, Iowa. 1991

REFERENCES

Available upon request