

Attachment B
CVs of eight proposed panel members

Douglas W. Hamilton, Ph.D. P.E.

Associate Professor and Extension Waste Management Specialist.
Biosystems and Agricultural Engineering. Oklahoma State University
Stillwater, OK 74078

dhamilt@okstate.edu

405-744-7089

<http://osuwastemanage.bae.okstate.edu> www.youtube.com/osuwastemanagement

EDUCATION

Ph. D. Agricultural Engineering Pennsylvania State University. 1992
M.S. Agricultural Engineering Iowa State University. 1985
B.S. Agricultural Engineering University of Arkansas. 1983

PROFESSIONAL EXPERIENCE

Associate Professor	Biosystems and Agricultural Engineering and Extension Waste Management Specialist	Oklahoma State University 2000-present
Assistant Professor	Biosystems and Agricultural Engineering and Extension Waste Management Specialist	Oklahoma State University 1995-2000
Assistant Professor	Biosystems and Agricultural Engineering and Extension Soil and Water Specialist	University of Tennessee. 1992-1995.
Inspection Engineer II	Department of Pollution Control and Ecology	State of Arkansas 1985-1988

PROFESSIONAL REGISTRATION

Tennessee: PE # 00101266

AWARDS

Blue Ribbon ASABE Education Aids Competition. 2013, 2011, 2002 and 2000

Secretary of Agriculture Honor Award. 2002. Leadership of Oklahoma Poultry Waste Management Education Team.

Certificate of Achievement USDA-CSREES. 2002. Leadership of Oklahoma Poultry Waste Management Education Team.

PROFESSIONAL ASSOCIATIONS

American Society of Agricultural and Biological Engineers
Water Environment Federation
Air and Waste Management Association
North American Colleges and Teachers of Agriculture
Oklahoma Association of Extension Agricultural Agents

ELECTED SCIENTIFIC AND SERVICE COMMITTEES.

Chesapeake Bay Program Expert Panel on Manure Treatment Technologies (Chair) 2014-2016.

Chesapeake Bay Program Expert Panel on Animal Waste Management Systems. 2016.

Board of Directors, North American Manure Expo, Inc. 2014-2017.

Stakeholders Advisory Group for the Growth Promoters, Wind, and Human Ecological Health USDA-NRI Integrated Project at Texas Tech University. 2010-2013.

Manure and Byproduct Utilization. USDA-ARS/CSREES. St Louis, MO. 2008.

Water Quality Research Summit. National Pork Board. Des Moines, IA 2008.

OK Delegation to the First International Forum on Permaculture and Intensive Agriculture. Facultad de Zootecnia, UA Chihuahua, Mexico. 2004.

Assessment of Ammonia Emissions from the Stores of Animal Wastes in Reggio Piemonte. Univerista degli Studi di Torino, Italy. 2003-2004.

SELECTED PUBLICATIONS

Hamilton, D.W. 2017. *Making Mortality Compost You Would Be Proud to Spread on Any Field*. Slide Set for Poultry Waste Management Education Update Training. Stillwater, OK: Oklahoma Cooperative Extension Service

Hamilton, D.W., K.B. Cantrell, J.C. Chastain, A.L. Ludwig, R.B. Meinen, J.A. Ogejo, J.P. Porter. 2016. *Manure Treatment Technologies, Recommendations from the Manure Treatment Technologies Expert Panel to the Chesapeake Bay Program's Water Quality Goal Implementation Team*. Annapolis, MD: Chesapeake Bay Program.

Hamilton, D.W. 2016. Beef (Fattened Cattle), pp 44-55 in *Animal Waste Management Systems, Recommendations from the BMP Expert Panel for Animal Waste Management Systems in the Phase 6 Watershed Model*. Annapolis, MD: Chesapeake Bay Program.

Hamilton, D.W. and M.T. Steele. 2014. Operation and performance of a farm-scale anaerobic sequencing batch reactor (ASBR) treating dilute swine manure. *Transactions of ASABE*. 57(5),1473-1482.

Lim, T.T., G. Arnold, A. Douridas, K. Erb, T. Bay, C.E. Henry, C.E., R.E. Meinen, and **D.W. Hamilton**. 2013. North American Manure Expo: Creating a permanent, sustainable base for hands-on manure applicator education, final report. Great Lakes Water Quality Program.

Hamilton, D.W., M. Hubert, M. Kerley, N. Meister, A. Parks, J. Payne, and J.M Sweeten. 2009. Agricultural industries byproduct workgroup results, pp 37-44. In, *Feedstocks Workshop Report*. Stillwater, OK: South Central Region Sun Grant Center.

Murie, M.E., and D.W. **Hamilton**. 2008. Further processing of poultry mortality compost by vermicomposting. ASABE paper 08-4908. St. Joseph, MI: ASABE

Abbreviated VITA of Thomas M. Bass

EDUCATION

Doctoral Candidate, Ecology and Environmental Science, Montana State University, (expctd. graduation 2020)

Master of Science in Agricultural Education, Montana State University, (adult and Extension education 2000)

Bachelor of Science in Agriculture: Animal Science, University of Georgia (area of interest: animal metabolism and nutrition 1997)

PROFESSIONAL POSITIONS

Associate Extension Specialist – Montana State University Extension, Provide support to producers and other stakeholders in matters of animal waste management, agricultural water quality regulations/policy, small acreage management, composting, sustainable agricultural, and agroemergency preparedness (07/07 – Present)

Public Service Representative – University of Georgia Cooperative Extension Depts. of: Animal and Dairy Science, & Biological and Agricultural Engineering, Serve as a jointly appointed public service faculty conducting programs as described below under “**Program Specialist**” with an enhanced focus on interdisciplinary cooperation between home departments and across the College. (01/06 – 07/07)

Program Specialist – University of Georgia Cooperative Extension, Dept. of Biological and Agricultural Engineering, Serve as Extension Specialist in the area of animal waste management, agricultural pollution prevention and water quality. Coordinate and conduct state wide programs in nutrient management, regulatory compliance and non-point source pollution prevention for county agents, livestock and poultry producers, policy makers and other stakeholders. (05/01 – 12/05)

SELECT PUBLICATIONS, BULLETINS & WEB RESOURCES

Byker-Shanks, C. et al (including Bass) “Montana Beef to School Case Studies”, Montana State University Extension (in review 2018)

Jordan, N. et al (including Bass) “New Curricula for Undergraduate Food-Systems Education: A Sustainable Agriculture Education Perspective”, NACTA Journal (December 2014 v58n4: 302-310)

Evertz, Greg, T. Bass, D. Ashcraft “Onsite Guide for Livestock Operations (manure management and water quality), MSU Extension Service and MT Association of Conservation Districts (2013)

Bass, T. M. et al “Livestock Mortality Composting for Large and Small Operations in the Semi-Arid West”, MSU Extension Service in cooperation with CSU, NMSU, and UW (Nov 2011)

Bass, T.M. “Record Keeping for Animal Feeding Operations”, Montana State University Extension Service (MT200814AG, 2009)

Menalled, Fabian et. al. (including T.M. Bass) “An Introduction to the Principles and Practices of Sustainable Farming”, Montana State University Extension Service, (MT200813AG, 2008)

Bass, T. M. “Using Manure as Fertilizer”, Montana State University Extension Service (EB0184, 2008)

RECENT CONTRIBUTIONS TO INSTRUCTION

Committee Member – Alicia Leitch, Thesis: Institutional food waste interventions and reduction, and waste management via composting. MS in Health and Human Development, Graduated Spring 2016

Annually Scheduled Guest Lecturer (two weeks) – “Sustainable Livestock Systems” – ANSC 222 – 2012 - 2017;

SELECT WORKSHOPS AND PRESENTATIONS

“Clean Water Act - Waters of the US and Conservation” February 2017, Stillwater Range Association Annual Meeting, Bozeman, MT (presenter)

“Waste Management at Meat Processing Plants” March 2016, eXtension NMPAN-CoP, National Webinar

“Mortality Management Options during an Avian Influenza Outbreak” October 2015, eXtension LPELC National Webinar (speaker with J. Payne and J. Bonhotal)

“Manure Management and Composting Equipment for Small Livestock Enterprises” April 2013, Waste to Worth Conference, Denver Colorado (speaker, and program planning committee)

“Securing Community Agrosecurity Planning (S-CAP)” 2-day Multi-County Workshops, 5 events May 2011 thru Jan 2013 - Billings, Missoula, Whitehall, Lewistown, and Great Falls (co-promoter and instructor)

“Livestock Environment and Sustainable Ag Enterprises” at Sen. J. Tester’s Small Business Development Workshop, April 2011 - Bozeman, MT (invited speaker)

SELECT GRANTS (2010-PRESENT)

\$214,969, T. Bass (MSU-PI), subcontract to UVM & J. Smith (PI), from USDA-NIFA, “A human behavioral approach to reducing the impact of livestock pest or disease incursions of socio-economic importance”

\$220,021, C. Byker-Shanks et al (including Bass Co-PI), from USDA-Western SARE “Examine, optimizing, and building capacity for Montana's local beef to school supply chain”

\$314,049, T. Bass (PI), from USDA-NRCS administered by University of Wisconsin Extension Service “Conservation Reserve Program Readiness Initiative – Western Region Sub-contract.”

\$97,000 J. Davis et. al (including Bass Co-PI), from Western SARE, “In-service Training and Decision-Making Tools for Optimizing Livestock Mortality Management.” MSU portion from Colorado State University \$16,165.

\$644,400, J. Heemstra, T. Bass (Co-PI), S. Arnold & G. Stone, From USDA-NIFA, “Enhancing Environmental Management of Beginning Farmers and Ranchers.” MSU portion from U of Nebraska Lincoln \$152,000.

SELECTED AWARDS AND RECOGNITION

American Society of Agronomy – Outstanding Educational Materials (print and audio-visual) –Livestock Mortality Composting: in the Semi-Arid West (SARE Funded project)

National eXtension Initiative – Outstanding Community of Practice – Livestock and Poultry Environmental Learning Center (member of 6 person leadership team -2011)

Soil and Water Conservation Society – MT Chapter President’s Award, “in recognition of service to the chapter.” (2011), and Georgia Chapter Honor Award, “For efforts in assisting producers, in sound nutrient management, and supporting the Society’s mission.” (2007)

SELECTED OFFICES AND APPOINTMENTS

Soil and Water Conservation Society – Chair of International Meeting Program Planning Committee – (2013-2015)

National Livestock and Poultry Environmental Learning Center – leadership team member

MSU Sustainable Food and Bioenergy Systems: Degree Program – advisory committee member/lecturer

Amanda Abnee Gumbert

Extension Water Quality Specialist

N-106K Ag Science North Lexington, KY 40546-0091

Phone: 859-806-1087 Email: Amanda.gumbert@uky.edu***EDUCATION***

PhD, Soil Science, University of Kentucky, August 2013

MS, Plant and Soil Science, University of Kentucky, August 2001

BS, Plant and Soil Science, University of Kentucky, May 1999, Cum Laude

PROFESSIONAL EXPERIENCE

December 2014-present Water Quality Coordinator/Extension Water Quality Specialist
University of Kentucky, Cooperative Extension Service

March 2007-December 2014 Extension Water Quality Specialist/Liaison to the KY Division of
Conservation
University of Kentucky, Cooperative Extension Service

July 2001-March 2007 Extension Associate for Environmental and Natural Resource
Issues
University of Kentucky, Cooperative Extension Service

EXTENSION EXPERIENCE**Kentucky Agriculture Water Quality Act:**

The Kentucky Agriculture Water Quality Act requires farms of 10+ acres in agricultural or silvicultural production to develop and implement a water quality plan. Water quality plans include practices to control runoff, manage manure and nutrients, and protect waterbodies. Responsibilities include: researching, adapting, and creating educational materials; interagency coordination; collaborating with researchers to develop water quality research and demonstration projects; partnering with federal/state/local government entities to provide assistance to farmers; training technical field staff; delivering information to agricultural producers through county-based programs; acquiring external funding.

COMMITTEE LEADERSHIP AND INVOLVEMENT

Hypoxia Task Force-Land Grant University Extension Research Activity (SERA-46) University of Kentucky Extension representative, 2014-present; Executive Committee, 2015-present; Co-Chair 2016-present

Kentucky Agriculture Water Quality Authority, University of Kentucky Cooperative Extension Service Governor-Appointed Representative, 2009-present

Kentucky Water Resources Research Institute Committee on Research and Policy, 2016-present

SELECTED PUBLICATIONS

Gumbert, A.A. 2017. Living Along a Kentucky Stream. University of Kentucky, College of Agriculture. IP-73.

Higgins, S., K. Schmidt, L. Moser, and **A. Gumbert**. 2016. Best Management Practices for Kentucky Dairy Operations. University of Kentucky, College of Agriculture.

J.W. Lehmkuhler, W.R. Burris, S.R. Smith, Jr, G. Halich, K. Burdine, M. Arnold, S.F. Higgins, **A. Gumbert**, and K. Laurent. 2014. *The Kentucky Master Stocker Program*. Journal of Animal Science Supplement 92 (290).

Higgins, S., K. Schmidt, and **A. Gumbert**. 2014. Kentucky Nutrient Management Planning Guidelines (KyNMP). University of Kentucky, College of Agriculture. ID-211.

Higgins, S., S. Wightman, and **A. Gumbert**. 2013. Environmental Compliance for Dairy Operations. University of Kentucky, College of Agriculture. ID-200.

Higgins, S.F., S.J. Wightman, and **A.A. Gumbert**. 2012. On-farm Composting of Animal Mortalities. University of Kentucky, College of Agriculture. ID-166.

Gumbert, A.A. and M.S. Coyne. 2011. Managing riparian buffers to improve soil structural properties. *In* Proceedings North Central Extension-Industry Soil Fertility Conference. Des Moines, Iowa. 27:138-144.

Gumbert, A.A., S.F. Higgins, and C.T. Agouridis. 2009. Riparian Buffers: A Livestock Best Management Practice for Protecting Water Quality. University of Kentucky, College of Agriculture. ID-175.

Higgins, S.F., S. Guinn, and **A.A. Gumbert**. 2008. On-farm Disposal of Animal Mortalities. University of Kentucky, College of Agriculture. ID-167.

HONORS AND AWARDS

Association of Natural Resources Extension Professionals (ANREP) Gold Award for Promotional Materials, *Kentucky Agriculture Water Quality Act videos*, 2017

Conservation Person of the Year, Kentucky Association of Conservation Districts, 2015

Kentucky Outstanding Graduate Student Award, North Central Extension-Industry Soil Fertility Conference, 2011

Robert A. Lauderdale Award for Outstanding Contributions in Water Quality, Kentucky Water Resources Research Institute, 2011

BIOGRAPHICAL SKETCH**Ernest Hovingh**Associate Research Professor
Extension & Field Investigation Veterinarian**Education and Training**

Ontario Veterinary College University of Guelph; Guelph, ON, Canada	DVM	1990	
Atlantic Veterinary College, University of Prince Edward Island; Charlottetown, PEI, Canada	Clinical residency	1995	Ambulatory Medicine
Atlantic Veterinary College, University of Prince Edward Island; Charlottetown, PEI, Canada	PhD	1998	Epidemiology/ Dairy Herd Health

Additional Training

Large Animal Carcass Management Training Workshop (2017)
Farmers Assuring Responsible Management Certified Trainer (2016)
Feed Industry HACCP (2014)
Tools for Infectious Disease Epidemiology – Cornell University (2007)
HACCP/SQF (Safe Quality Food) Implementer Training (2001)

Research and Professional Experience

2017 – current	Associate Research Professor, Extension / Field Investigation Veterinarian Veterinary Extension Program Team Leader Pennsylvania State University
2004 – 2017	Sr. Research Associate/ Extension and Field Investigation Veterinarian Pennsylvania State University
1999 – 2003	Assistant Professor / Extension Veterinarian VA-MD Regional College of Veterinary Medicine Virginia Polytechnic Institute and State University.
1992 – 1995	Clinical Residency in Food Animal Medicine Atlantic Veterinary College, UPEI
1990 – 1992	Veterinarian – mixed animal practice. Ontario, Canada

Recent Awards

PA Veterinary Medical Association Animal Welfare Advocacy Award - 2012

Professional Memberships

Pennsylvania Veterinary Medical Association
American Association of Extension Veterinarians
United States Animal Health Association
National Mastitis Council

Current and Recent Research Support

Antimicrobial Resistance of Enterobacteriaceae Populations among Young Cull Animals from
Northeastern US Dairy Operations. 09/01/14-09/30/18 \$160,000.
Role: PI. Funding Source: USDA:ARS

Current and Recent Research Support (con't)

An Integrated Milk Quality Extension and Education Program to Reduce Mastitis and Antimicrobial Use. 2/1/13- 1/31/19 \$672,000.
Role: PI. Funding Source USDA:NIFA.

Antimicrobial Resistance of Enterobacteriaceae Populations in Northeastern US Dairy Operations. 06/15/13-06/14/17 \$91,200.
Role: co-PI. Funding Source: USDA:ARS

Antibiotic Use and Resistance in Youngstock: Patterns, Attitudes, and Behaviors on Pennsylvania Dairy Farms. 02/14/17-01/30/18. \$21,044.
Role: PI. Funding Source: PA Department of Agriculture.

Pilot Study of Factors Affecting Maintenance of Mycobacterium, Salmonella, E.coli, and Listeria on Dairy Farms. 09/01/03-08/31/16; \$338,465.
Role: Co-PI. Funding source: USDA:ARS

On-farm optimal intervention programs resulting in reduction of MAP bacterial load in milk and dairy beef. 5/1/12-4/30/16. \$36,000
Role: Co-PI. Funding source: Cornell subaward, USDA:NIFA

Peer-reviewed publications (past 4 years).

Cao, H., A.K. Pradhan, J.S. Karns, D.R. Wolfgang, **E. Hovingh**, B. T. Vinyard and J.A.S. Van Kessel. "Prevalence and risk factors for antimicrobial resistance on U.S. dairy operations." (2017) J. Animal Science, Vol. 95, Supp 4: 131-132.

Beaver, A., R.W.Sweeney, **E.Hovingh**, D.R.Wolfgang., Y.T.Gröhn, Y.H.Schukken.
"Longitudinal relationship between fecal culture, fecal quantitative PCR, and milk ELISA in Mycobacterium avium ssp. paratuberculosis-infected cows from low-prevalence dairy herds." (2017) J Dairy Science, 100(9): 7507-7521.

Schewe, R.L., J. Kayitsinga, G.A. Contreras, C. Odom, W.A. Coats, P Durst, **E.P. Hovingh**, R.O. Martinez, R. Mobley, S. Moore, and R.J. Erskine. "Herd Management and Social Variables Associated with Bulk Tank Somatic Cell Counts in Dairy Herds in the Eastern United States." (2015). J. Dairy Science, 98(11): 7650-7665.

Haley, B.J., M. Allard, E. Brown, **E. Hovingh**, J.S. Karns, and J.S.van Kessel. "Molecular Detection of the Index Case of a Subclinical Salmonella Kentucky Epidemic on a Dairy Farm." (2015). Epidemiology and Infection, 143(04): 682-686.

Lu, Z., Y.T. Gröhn, R.L. Smith, J.S. Karns, **E. Hovingh**, and Y.H. Schukken. "Stochastic Modeling of Imperfect Salmonella Vaccines in an Adult Dairy Herd." (2014). Bulletin of Mathematical Biology. 76(3):541-565.

Tewari, D., **E.Hovingh**, R.Linscott, E. Martel, J. Lawrence, D. Wolfgang, and D. Griswold.
"Mycobacterium avium subsp. paratuberculosis Antibody Response, Fecal Shedding, and Antibody Cross-Reactivity to Mycobacterium bovis in M. avium subsp. paratuberculosis-Infected Cattle Herds Vaccinated against Johne's Disease." (2014). Clin Vaccine Immunol., 21(5): 698-703.

Van Kessel, J.S., J.S. Karns, D.R. Wolfgang, and **E. Hovingh**. "Regional Distribution of Two Dairy-Associated Salmonella enterica Serotypes." (2013). Foodborne Pathogens and Disease, 10(5): 448-452.

Mark Hutchinson
 Extension Professor
mhutch@maine.edu

Academic Background

1997 Master of Science, Ecology and Environment Science, University of Maine
 1982 Bachelor of Science, Wildlife Management, University of Maine – Orono

Professional Experience

2000- present Extension Professor, U. of Maine Cooperative Extension, Orono
 2011-present Graduate Faculty, School of Food and Agriculture, U. of Maine
 1999- 2000 Associate Extension Professor, U. of New Hampshire
 Cooperative Extension

Professional Activities

- SARE Fellow: Sustainable Agriculture Research And Education Fellow 2015-2017
- USDA Compost Subject Matter Expert (SME) for Animal Carcass Composting
- Certified Crop Advisor 1997-2018
- Certified Nutrient Planner 1997-2018
- A director of Maine Compost School 2002-2018
- Co-Chair of International Carcass Management Symposium (2006, 2009, 2012)
- New England Vegetable and Fruit Conference steering committee member (2001-2017) Soil Health Session Chair

Peer Reviewed Articles

Keaten, J., Hutchinson, M., 2017. "Efficacy and Efficiency of Poultry Carcass Composting Using Different Mechanical Mixing Equipment for Avian Influenza Outbreaks". International Journal of One Health. Vol. 3/4 pp. 19-27

Marshall, K., Erich, S., Hutton, M., Hutchinson, M., Mallory, E., 2016 "Nitrogen Availability from Compost in High Tunnel Tomato Production" Compost Science and Utilization. Vol. 24, Issue 3 pp. 147-158

Seekins, B., Hutchinson, M., King, M.A., MacDonald, G. 2015. "Pile Structure in Large Animal Carcass Compost Piles: Zone Differences in Physical and Chemical

- Characteristics". Compost Science and Utilization. Volume 23, Issue 2, pp. 67-86
- King, M.A., MacDonald, G., Hutchinson, M., and Seekins, B., 2014. "A Comparison of the Quantity and Quality of Leachate Generated by Five Compost Feedstocks Exposed to Simulated Rainfall". Journal of Solid Waste Technology and Management, Vol. 40 (1), pp. 57-69.

Grants

- Pires, A., Hutchinson, M., Millner, P., Pagliari, P., Misiewicz, T., Lilley, J. Multi-regional Risk Analysis of Farm Manure Use : Balancing Soil Health and Food Safety for Organic Fresh Produce Production. USDA:OERI. \$1999,848. 2017-2020.
- Hutchinson, M. 6th International Symposium on Animal Mortality Management. USDA:APHIS. \$50,000; 2017 -2018
- Hutchinson, M. USDA Compost Subject Matter Expert Training for Avian Influenza. USDA:APHIS \$48,500. 2016-2017.
- Rangarajan, A., M. McGrath, D. Brainard, Z. S. Zendrei, M. Hutton, M. Hutchinson and E. Gallandt. Farmer-Designed Systems in Reduced Tillage in Organic Vegetables. NIFA-USDA Organic Agriculture Research and Education Initiative (\$1,998,625; UMaine, \$543,625; 10/2014-9/30/2018)
- Erich, M.S., M.L. Hutchinson, M.Hutton. Assessment of Compost Properties as Predictors of Compost N Supply to Tomatoes Grown in High Tunnels. Maine Agricultural Center 2013-2014. \$4951

Research Projects:

- Farmer-Designed Systems in Reduced Tillage in Organic Vegetables. Pi's Dr. Anu Rangarajan, Dr. Mark Hutton, Nicholas Rowley and Mark Hutchinson 2014-2018.
- Use of Mechanical Degradation During Avian Outbreaks Trials. 2016-2017 co- PI Mark Hutchinson and Dr. Jennifer Keaten.
- Nitrogen Availability from Compost in High Tunnel Tomato Production. Kathleen Marshal, Dr. Sue Erich, Dr. Mark Hutton, Mark Hutchinson and Dr. Ellen Mallory. 2014-2016.
- High Tunnel Compost Application, A long term study of Compost Application Rates. Co-Pi Mark Hutchinson and Dr. Mark Hutton 2013-2018.
- Compost Rate Trial for Commercial Seedling Production. 2014-2105. PI. Mark Hutchinson Co PI Jennifer Stiles.

TENG TEEH LIM, Ph.D., P.E.

Phone: 573-864-7820

E atford Chase Pkwy, Columbia, MO 65201

E-mail: limt@missouri.edu**A. Education**

Ph.D., Purdue University, Agricultural & Biological Engineering, 08/2001
M.S. (09/1997) and B.S. (12/1995), Biosystems & Agricultural Engineering, University of Kentucky

B. Employment History

Associate Professor, University of Missouri (2014-current)
Assistant Professor, University of Missouri (2009-2014)
Research Assistant Professor, Purdue University (2006-2009)
Research Scientist, Purdue Agricultural Air Quality Laboratory (2004-2006)
Post-Doctoral Research Associate, Purdue University (2001-2004)

C. Selected Grants or Fellowships

1. 2018-2019 T-Lim, C. Payne, R. Massey, and J. Zulovich. Preventing and Responding to Major Disease Outbreak. North Central Extension Risk Management Education. \$50K.
2. 2017-2018. T.-T. Lim. Evaluation of Biological-Based Additive for Pollution Abatement. USDA Rural Business Development Grants. \$37K.
3. 2017-2018. T.-T. Lim. Evaluation of a commercial byproduct as co-digestion material for enhanced biogas production. Private industry. \$20K.
4. 2017. T.-T. Lim, D. Brandt, and R. Miles. Assemblage and Analysis of Missouri Soil Health Data. North Central Region Water Network, and The Soil Health Institute. \$5K.
5. 2016-2018. T.-T. Lim, C.H. Lin, and E. Wan. Degradation of Veterinary Antibiotics via Digestion. University of Missouri Research Board. \$50K.
6. 2016-2019. T.-T. Lim and C.H. Lin. Matching Assistantship for the Project Degradation of Veterinary Antibiotics via Anaerobic Digestion. The Center for Agroforestry, University of Missouri. \$21K.
7. 2016-2018. T.-T. Lim and J. Zulovich. Sustainability Evaluation of a Solid-Liquid Manure Separation Operation. National Pork Board. \$72K.
8. 2016-2018. T.-T. Lim and J. Zulovich. Preventing and Responding to Future Disease Outbreak. North Central Extension Risk Management Education. \$46K.
9. 2015. E. Cortus, N. Embertson, T.-T. Lim, et al. Mapping the Pathways for Effective Information Dissemination and Education between Manure Nutrient Management Agriculture Professionals. NCRWN Smith Lever Funds. \$29K.

D. Selected Publications

1. Lim, T.-T., C. Wang, A.J. Heber, N. Ji-Qin, and L. Zhao. 2018. Effect of Electrostatic Precipitation on Particulate Matter Emissions from a high-rise layer house. In: Air Quality and Livestock Production. Australia: CRC Press. Eds., Banhazi, T., A. Aland, J. Hartung. (in press).
2. Sharara, M. A., and T.-T. Lim. 2018. Manure Solid Separation. In Manure Handling and Application Practices, (in review). MidWest Plan Service.

3. Nogueira, R. G. S., T.-T. Lim, H. Wang, and P. H. M. Rodrigues. 2018. Performance, microbial community analysis and fertilizer value of anaerobic co-digestion of cattle manure with waste kitchen oil. *Transactions of ASABE*: (Submitted).
4. Nogueira, R. G. S., T.-T. Lim, H. Wang, and P. H. M. Rodrigues. 2018. Performance, microbial community analysis and fertilizer value of anaerobic co-digestion of cattle manure with waste kitchen oil. *Transactions of ASABE*: (Submitted).
5. Ni, J. Q., A. J. Heber, T. T. Lim, S. M. Hanni, and C. A. Diehl. 2017. Laboratory evaluation of a manure additive for mitigating gas and odor releases from layer hen manure. *Aerosol and Air Quality Research* 17(9). doi: DOI: 10.4209/aaqr.2016.07.0327.
6. Lim, T.-T., C. B. Bromfield, J. A. Zulovich, and R. Massey. 2017. Biosecurity: Collaboration to ensure state of readiness. In *International Symposium on Animal Environment and Welfare*. Rongchang, Chongqing, China
7. Schmidt, A., T.-T. Lim, and S. Mukhtar. 2015. ASABE EP585, Standards for Animal Mortality Composting. ASABE, St. Joseph, MI 49085.
8. Chen, L., T.-T. Lim, Y. Jin, A.J. Heber, J.-Q. Ni, E.L. Cortus, and I. Kilic. 2014. Ventilation rate measurements at a mechanically-ventilated swine finishing quad barn. *Biosystems Engineering*, 121:96–104.
9. Lim, T.-T., Y. Jin, Ni, J.-Q., and A.J. Heber. 2012. Field evaluation of biofilters in reducing aerial pollutant emissions from commercial finishing barn. *Biosystems Engineering*, 112(3): 192-201.
10. Jin, Y., Lim, T.-T., Ni, J.-Q., Ha, J.-W., & Heber, A. J. 2012. Emissions monitoring at a deep-pit swine finishing facility: Research methods and system performance. *Journal of Air and Waste Management*, 62(11):1264-76.
11. Schauburger, G., T.-T. L. Lim, J.-Q. Ni, D. S. Bundy, B. L. Haymore, C. A. Diehl, R. K. Duggirala, and A. J. Heber. 2012. Empirical model of odor emission from deep-pit swine finishing barns to derive a standardized odor emission factor. *Atmospheric Environment*, 66(0): 84-90.
12. Ni, J.-Q., A. J. Heber, E. L. Cortus, T.-T. Lim, B. W. Bogan, R. H. Grant, and M. T. Boehm. 2012. Assessment of ammonia emissions from swine facilities in the U.S. – Application of knowledge from experimental research. *Environmental Science & Policy*, 22(0): 25-35.

Synergistic Activities

Professional Engineer (Indiana, 2005-current)

Chair, NRES-27 - Agricultural Byproducts & Animal Mortality Management Systems Committee, American Society of Agricultural and Biological Engineers (2015-2016)

Chair, PAFS-40/4 - Swine Housing Committee, American Society of Agricultural and Biological Engineers (2014, 2015)

Ad hoc reviewer of scientific manuscripts, Extension publications, paper award competition, and research grants

Missouri Inter-Technical Working Group (between academic and state/federal government agencies) meetings for Agricultural Engineering Facilities

Brady J. Deaton Fellow in International Agriculture Award (2018)

Ronald J. Turner Global Education Award, University of Missouri (2014)

Sandra L. Means, P.E.

Environmental Engineer
 Animal Manure Nutrient Management Team
 USDA, NRCS
 Greensboro, NC 27401

Sandy.Means@gnb.usda.gov

336-370-3334

EDUCATION

M.E. Agricultural Engineering University of Florida. 1991
B.S. Agricultural Engineering University of Florida. 1988

PROFESSIONAL EXPERIENCE

Environmental Engineer	National Animal Manure and Nutrient Management Team	USDA, NRCS Greensboro, NC 2016-present
Agricultural Engineer	Area Engineer	USDA, NRCS Marianna, FL 1996-2016
Agricultural Engineer	Project Engineer, Lake Apopka and Fernery Project	USDA, NRCS Tavares, FL 1993 - 1995
Agricultural Engineer	Project Engineer, AgSWM Project	USDA, NRCS Palmetto, FL 1991-1993

PROFESSIONAL REGISTRATION

Florida: FL # 49950

PUBLICATIONS

Means, S.L. 2017. *What's New with CNMP? Waste to Worth: Spreading Science and Solutions*. Cary, NC April 18-21, 2017

Means, S.L., G. Zwick, G. Johnson, J. Porter. 2017. *USDA-NRCS and the National Air Quality Site Assessment Tool (NAQSAT) for Livestock and Poultry Operations*. Waste to Worth: Spreading Science and Solutions. Cary, NC April 18-21, 2017

Means, S.L. and J.T. Mustion. 1994. *Agricultural Surface Water Management in Southwest Florida*. Proceedings of the Second Conference, Environmental Sound Agriculture, Orlando, FL April 20-22, 1994. pp 254-259.

Means, S.L., R.A. Bucklin, R.A. Nordstedt, D.R. Bray, C.J. Wilcox, W.K. Sanchez. 1992. *Water Application Rates for A Sprinkler and Fan Dairy Cooling System in Hot, Humid Climates*, Applied Engineering in Agriculture, American Society of Agricultural Engineers, May 1992, Vol. 8, No. 3. Pp. 375-379.

George W. (Bud) Malone

Malone Poultry Consulting

13713 Allen Road, Princess Anne, MD 21853

Phone: 443-944-6910 Email: malonepoultryconsulting@gmail.com***EDUCATION***

MS, Animal Science, University of Massachusetts, 1975

BS, Agriculture, University of Maryland, 1972

EMPLOYMENT HISTORY

February 2009- present	Litter and Waste Management Consultant (part time), Malone Poultry Consulting.
June 1997-February 2009	Extension Poultry Specialist, University of Delaware
February 1975-June 1997	Associate Scientist, Poultry, University of Delaware

PROFESSIONAL AND EXTENSION EXPERIENCE

Research, extension and consulting activities have focused primarily on litter and mortality management, and BMPs to address broiler waste and air quality issues. Developed Delaware's initial waste management plan and provided certification training for all its poultry growers on litter and waste management including composting of routine and catastrophic mortality losses. Was Delmarva's poultry industry 2004 team leader for disposal of avian influenza-infected flocks using in-house composting; provided leadership on a national training program on options and procedures for depopulating and disposing of poultry flocks with avian influenza. Conceived and successfully adopted the use of foam for mass depopulation of avian influenza infected flocks and demonstrated following up with in-house composting for carcass disposal. Developed guidelines for in-house composting (windrowing) of poultry litter between flocks as a pathogen reduction procedure. Proposed, demonstrated and provided leadership on a vegetative environmental buffer program for poultry farms to address air and water quality concerns, improve neighbor relations and enhance production efficiency. Consulted on an innovative flooring system for broiler houses; provided calculations for the cost effectiveness of poultry mortality freezers as a BMP, technical support and poultry industry liaison for a Delmarva litter anaerobic digestion/nutrient recovery plant; and technical support to defend three poultry farm nuisance-related lawsuits.

ABBREVIATED MEMBERSHIP AND COMMITTEE INVOLVEMENT

- Poultry Science and World Poultry Science Associations
- Delmarva Poultry Industry, Inc. Environmental Committee, Grower Committee, Emergency Poultry Disease Task Force and Board of Directors.
- National Poultry Waste Management Program Committee
- Poultry Science Association Environmental Quality Committee (2004-06).
- Federation of Animal Science Societies Environmental Committee (2005-07).
- W-195 Regional Project on Water Quality in the Poultry Production and Processing, vice president (2003-05).
- S-291 Regional Project on Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine and Dairy Facilities, president (2004-05)

SELECT PUBLICATIONS, PROCEEDINGS AND EXTENSION DOCUMENTS

- **G. Malone** and T. Marsh-Johnson. Litter Management in the 21st Century. A Practical Guide for Managing Risk in Poultry Production (Chapter 10). Published by American Association of Avian Pathologists, Inc. July 2011.
- **G. Malone**, J. Blake, P. Patterson, N. Zimmermann, J. Carey, A. Haque and N. Tablante. Poultry Carcass Disposal Options for Routine and Catastrophic Mortality. Council for Agricultural Science and Technology (CAST). 2008. Issue Paper 40. CAST, Ames, Iowa.
- **G. Malone**, G. VanWicklen and S. Collier. Efficacy of Vegetative Environmental Buffers to Mitigate Emissions from Tunnel-Ventilated Poultry Houses. Proceedings to Mitigating Air Emissions from Animal Feeding Operations. pp27-29. May 2008.
- E. Benson, **G. Malone**, R. Alphin, M. Dawson and G. Van Wicklen. Foam Based Mass Emergency Depopulation of Floor-Reared Meat-Type Poultry Operations. 2007 Poultry Sci. 86:219-224.
- **G. Malone**. Methods of Large Scale Emergency Euthanasia and Disposal Procedures for Catastrophic Poultry Disease Events. Proceedings to Facta. Santos, San Paulo, Brazil. May 5, 2006.
- **G. Malone**, G. VanWicklen, S. Collier and D. Hansen. Efficacy of Vegetative Environmental Buffers to Capture Emissions from Tunnel Ventilated Poultry Houses. Proceedings of Workshop on Agricultural Air Quality. Potomac, MD. June 7, 2006.
- N. Tablante, **G. Malone** and L. Carr. Guidelines for In-House Composting of Poultry Mortalities Due to Catastrophic Disease. Joint University of Maryland and Delaware educational compact disk. October 2003. Revised August 2005.
- **G. Malone**. In-House Composting of Avian Influenza Infected Flocks. Zootechna. October, 2004. pp 34-35.
- **G. Malone**. Using Trees to Reduce Dust and Odour Emissions from Poultry Farms. Proceedings to Poultry Information Exchange. Surfers Paradise, Qld. AU. April 19, 2004. pp. 33-38.
- **G. Malone**. Composting Poultry Losses. Proceedings to Poultry Information Exchange. Surfers Paradise, Qld. AU. April 19, 2004. pp. 39-42.

HONORS AND AWARDS

- United States Department of Agriculture, Natural Resources and Conservation Service recognition for exemplary service, research and educational efforts to protect air and water quality on poultry farms on the Delmarva Peninsula (2009).
- Cooperative Extension's Epsilon Sigma Phi Award for Outstanding Program Accomplishment (2007)
- Phibro Poultry Science Extension Award for Distinguished Service to the Nation's Poultry Industry (2007)
- Ratledge Family Award for Outstanding Public Service to the State of Delaware (2005)
- University of Delaware Cooperative Extension Positively Outrageous Service Award of Excellence (2005)
- Epsilon Sigma Phi's National "Gold Medal Award for Outstanding Program of Excellence" (2000)
- Delmarva Poultry Industry, Inc.'s Metal of Achievement Award (1992)
- University of Delaware Superior Performance Award (1991)