

LEO L. TIMMS

RANK:

Morrill Professor of Animal Science and Veterinary Diagnostic and Production Animal Medicine
Extension Dairy Specialist
Graduate Faculty - Full Member

EDUCATION:

Degree	Institution	Year
Ph. D. Dairy Science Minor in Microbiology	University of Wisconsin - Madison	1984
M. S. Dairy Science	University of Wisconsin - Madison	1982
B. S. Animal Science	Cornell University	1978
B.S. Agricultural Engineering	Cornell University	1978

PROFESSIONAL EXPERIENCE:

2009 - pres.	Full Professor, Extension Dairy Specialist, Department of Animal Science (70% extension, 10% teaching appointment); Veterinary Diagnostics and Production Animal Medicine (20% teaching / service), Iowa State University; Named Morrill Professor, 2013
2006 - 2009	Associate Professor, Extension Dairy Specialist, Department of Animal Science (70% extension, 10% teaching appointment); Veterinary Diagnostics and Production Animal Medicine (20% teaching / service), Iowa State University
2002-2006	Associate Professor, Extension Dairy Specialist, Department of Animal Science, Iowa State University, (80% extension, 20% teaching appointment)
1989-2002	Associate Professor, Extension Dairy Specialist, Department of Animal Science Iowa State University, (100% extension appointment)
1984-1989	Assistant Professor, Extension Dairy Specialist, Department of Animal Science Iowa State University (100% extension appointment)
1980-84	Graduate Research Assistant, Dairy Science Department, University of Wisconsin-Madison
1977-78	Nutrition Research Assistant, Animal Science Department, Cornell University
1977-78	Teaching Asst./Lab Instructor, Animal Science Department, Cornell University

PROFESSIONAL ACTIVITIES:

Alpha Zeta: Member (1986 - present); Faculty Advisor (1988-91)

American Dairy Science Association

Member (1981- present)
Extension and Education Committee (1990-1993)
Founder and Chairperson - Extension Education Exchange (1990-1993)
Editorial Board (1993 - 2000, 2003-2007)
Ad Hoc Reviewer (1985 – 1993, 2000-2002, 2007-present)
Production Division Council (1995- 1999); Secretary (2005-2006);
Vice Chair (2006- 2007); Chair (2007-2008)
Nominating Committee (1998-2000, 2006-2009)
West Agro Award Committee (1997-1999, chair 1999); (2006-2008, chair 2007-2008)
Long Range Strategic Planning Committee (2000)
National Joint Annual Meeting Program Committee (2007 – 2009; chair – 2009)
Hoard's Dairyman Youth Development Award Committee (2008-2013)
DeLaval Dairy Extension Award Committee (2010-present; chair 2012)
JAM Strategic Planning Committee (2010-2012)
Board of Directors (2013-2016)

Midwest Section ADSA

Midwest ADSA Student Contest (1997-1999); Chair (1998-1999)
Midwest ADSA Graduate Poster Contest founder/chair (2006-2009)
Midwest ADSA Quadrathlon Committee (2001-2006)
Secretary, Midwest Section ADSA (2002-2003)
Young Extension Award Committee (Chair), Midwest ADSA (2002-2003)
Vice President, Midwest Section ADSA (2003-2004)
Agribusiness Award Committee (Chair), Midwest ADSA (2004-2005)
President, Midwest Section ADSA (2004-2005) Past President (2005-2006)
Innovation in Dairy Research Award (Chair), Midwest ADSA (2005-2006)
Nominating Committee (Chair), Midwest ADSA (2005-2006)

Council for Agricultural Science and Technology Member (2007- present)

Dairy Iowa: Executive steering committee and working committees (2) (2011 – present)

Epsilon Sigma Phi: Member (1990 - present)

Extension Service/USDA

Lead Editor (video) - National Dairy Database (1991-1997)
Editor (milk quality) - National Dairy Database (1991 - 1993)
Lead Editor (milk quality) - National Dairy Database (1993 -2000)
National Dairy Quality Assurance Committee (1992 - 2010)
National Reproduction Workshop Committee (1992 - 1994)

Gamma Sigma Delta: Member (1986 - present)

International Association of Milk, Food, and Environmental Sanitarians

Member (1984 – 1997, 2003- present)

Iowa Association for Food Protection (Iowa Assoc. of Milk, Food, Environmental Sanitarians)

Member (1984 - present)
Legislative and Resolutions Committee (1990 - 1992)
Nominating Committee (1989 – 90, 2005- present)
Scholarship chair (2000- present)
3rd Vice President (2002-2003)
2nd Vice President (2003-2004)
1st Vice President (2004-2005)
President (2005-2006)
Past President (2006-2007)
Academic Liaison and Program Committee Coordinator (2007 – present)

Iowa Dairy Coalition: Board Member and Executive Committee (2006- 2011)

Iowa Dairy Products Association

Faculty Liaison (1986 - 2005) (IDPA merged with ISDA in 2005)

Iowa Dairy Development Committee: Member (2000-2006)

Iowa Dairy Goat Association

Member and Co-Chair of Annual Educational Seminars (1988- present)
ADGA National Meeting Committee (1999-2000)
ADGA AASRP National Meeting Chairperson (1999-2000)

Iowa Farm Bureau: Dairy Advisory Committee (2000- 2007)

Iowa Foundation for Agricultural Awareness: Education Committee (1989 - 1992)

Iowa State Dairy Association

Structure Committee (2001-2004)
Ralph Keeling Dairy Leadership Award Committee (2000-2003)
Member (2004- present)

Korean Rural Development Administration

RDA Honorary Scientist and Scientific Advisor (2009-pres.)

Midwest Dairy Association

Scientific Technical Advisory Committee (2008-present)
Iowa Division Board member (2012 – present)

National Conference on Interstate Milk Shippers: Goat Committee (1992 - 1995)

National Dairy Quality Assurance Program

Technical Review Committee (1991 - 2012)
Implementation Steering Committee (1991 - 2000)

National Dairy Shrine

Member (1984-present)
Graduation Production Award Selection Committee (2008-pres.)

National DHIA: Somatic Cell Core Parameter Committee (1987 -1995)

National Mastitis Council

Member (1981 - present)
Short Course Founder and Director (1989 - 1998)
Board of Director (1990 – 1997, 1998- 2006)
Executive Committee (1990 – 1997, 1998-2006)
Milking Machine Committee (1987 - 2000)
Membership Committee (1984 -2000, 2004-2007)
State Membership Chairperson (1986 - present)
Education Committee (1985 - 87)
Technology Transfer Chairperson (1988 - 89)
Treasurer (1998- 2002)
Research Foundation Ambassadors Treasurer (1998-2002)
Finance Committee (1999-2003)
2nd Vice President / Shortcourse Chair (2002-2003)
1st Vice President / National Program Chair (2003-2004)
President (2004-2005)
Past President (2005-2006)
NMC Research Foundation: Board member and Treasurer (2006-2009)
Compensation Review Committee Chair (2006-2011)
NMC Research Foundations Student Scholar Committee (2008-2013)

North Central Extension Consortium on Bovine Reproduction

Charter member (2000-2006) (now national Dairy Reproduction Council 2007-present)

Northeast Dairy Practices Council

Member (1978 - present)
Teat Dip Review Committee (1998- 2004)

Northeast Iowa Dairy Foundation: Member (2000-present) and ISU Liaison (2000- 2010)

Sigma Xi: Member (1988-present)

Teat Club International: Charter member (1998-present)

AWARDS AND HONORS

2013 Iowa State University Morrill Professor

2013 Iowa State University Award for Distinguished Service in Extension

2013 Iowa Association for Food Protection Merle P. Baker Award (highest association honor)

2012 Iowa State University College of Agriculture and Life Sciences Team Award (Dairy Extension)

2011 ADSA Fellow

- 2011 National Agri-Marketing Assoc. 1st place winner nationally: MDA Midwest Dairy Academy for Retail Excellence
- 2010 Best of Show Award: MDA Midwest Dairy Academy for Retail Excellence: Region III NAMA
- 2010 ADSA DeLaval Dairy Extension Award
- 2010 Dean Lee R. Kolmer Award for Excellence in Applied Research (ISU – first recipient ever)
- 2009 Midwest Dairy Council (MDA) Service Award
- 2009 CSREES Outstanding Regional Research Project Award: NE 1009: Milk Quality and Mastitis
- 2008 American Association of Bovine Practitioners Honorary Member (4th non-veterinarian)
- 2008 Who's Who Among American Teachers
- 2008 Iowa Soccer Association Recreational Coach of the Year
- 2007 Who's Who Among American Teachers
- 2006 ISU Extension Team Award – Dairy Days
- 2006 Who's Who Among American Teachers
- 2005 Outstanding Faculty Award – ISU Intra Fraternity Council
- 2005 ADSA West Agro Award (dairy research and extension related to milk quality)
- 2005 Who's Who Among American Teachers
- 2004 ISUE Team Achievement Award: ISU Animal Science Report.
- 2002 Gamma Sigma Delta Extension Award of Merit (ISU): April 2002.
- 2002 Who's Who Among America's Teachers
- 2002 Nominated for Outstanding Faculty Member for Veishea
- 2001 Midwest ADSA Innovation in Dairy Research Award: March 2001.
- 2000 Dairy Product Technology Innovation Award: Innov'space Conference, France:
- 1999 Ralph Keeling Dairy Leadership Award: June 1999 (top award - Iowa dairy industry)
- 1996 Iowa Youth Soccer Association Coach of the Year
- 1994 Walnut Grove Livestock Service Award
- 1988 ISU Extension Young Professional Award
- 1988 Kiwanian of the Year (Ames Town and Country Kiwanis)

COURSES TAUGHT (*developed or **co-developed course)

<u>Course</u>	<u>Title</u>	<u>Years</u>	<u>Sem</u>	<u>Role</u>
AnSci 114	Survey of the Animal Industry	2003	F	3%
AnSci 214	Domestic Animal Physiology	1991-95	F, S	Student evaluator
		2007-pres.	F,S	1 lactation lecture
An Sci 230	Beginning/Transition Farm ICN course**	2005	S	15%, ICN coord.
AnSci 235	Dairy Cattle Science**	1998	F	25%
	Dairy Cattle Science	1999-2012	F	8-10%
AnSci 331	Animal Reproduction	2004-05	F,S	2 hours
AnSci 332	Laboratory Methods - Reproduction	1999-2008	F,S	1-2 weeks of labs
AnSci 337	Lactation Biology**	1998-99	S	25%
	Lactation Biology*	2003-pres.	S	100%
AnSci 334	Embryo Transfer	1996- 2005	F,S	2 hours
AnSci 434	Dairy Systems Management	1985 – pres.	F, S	Guest presenter 2-20 h / semester
An Sci 435	Applied Dairy Farm Evaluation*	2015	S	100%
An Sci 436	Dairy Enterprise Planning	1985 - 98	S	Guest presenter 2-6 h / semester
AnSci 437/537	Lactation Biology**	1993-97	S	25% of class
An Sci 441X	International Agriculture	2013– pres.	S	5%
AnSci 490B	Independent Study	1986-pres.	all	See student list
An Sci 493C	Artificial Insemination of Dairy Cattle**	1993-94	Su	30% of class
AnSci 493L	Dairy Nutrition (campus/distance ed)**	1997-2000	W	coordinator
AnSci 493M	Dairy Facilities (campus/distance ed)*	1997-2000	W	Prof. in charge/40%
AnSci 495/496	NZ Pastoral Farming Sys.(study abroad)**	2007	F	50%
	NZ Agricultural Systems(study abroad)**	2010	F	50%
	NZ Agricultural Systems(study abroad)**	2012	F	50%
AnSci 501	Survey of Animal Disciplines	2001-pres.	S	1 class
AnSci 590B	Special Topics (dairy case study class)*	1997-1999	S	100%
AnSci 654	Applied Beef / Dairy Cattle Breeding	2002	S	5%
FSHN 208	Dairy Foods: Current Issues/ Controversies	2011-pres.	S	10%
FSHN	Food Proteins (dairy)	1989-2003	S(alt)	1 hour
HS 332F	Honors Seminar	2003	S	7%
Sus Ag 515	Animal Production Systems	Bi-annual	F	8%
TSM 327	Animal Production Systems	2008-pres.	F	8%
VCS 410X	Dairy Herd Health**	1986-87	S	50%
VCS 413	Dairy Production Medicine**	1987-91	S	50%
VCS 418	Food Animal Production Medicine**	1991-94	S	15%
VCS 437	Infectious Diseases	1991-93	S	3 hours
VCS 490	Large Animal Reproduction	1985-89	F	3 hours
VDPAM 309	Animal Informatics	2007-pres.	S	8-15%
VDPAM 310	Intro. - Production Animal Medicine**	2006-2013	S	8-15%
VDPAM 340	Clinical Foundations	2006-pres.	Su	5%

VDPAM 402	Dairy Records Analysis**	2008-pres.	S	50%
VDPAM 411	Large Animal Rotation	2006-2010	all	10%
VDPAM 484	Dairy Production Medicine**	2000-pres.	Su, F	Coordinator / 50%
VDPAM 486	Intro Small Ruminant Production Medicine	2008-pres.	S	5-10%
VDPAM 491	Ruminant Nutrition	2009-2011	W	10%
VDPAM 494	Advanced Dairy Production Medicine**	2009- pres.	Sp	10-20%
VDPAM 496	Advanced Small Ruminant Nutrition	2009- pres.	F	8%
VMPM 413	Dairy Production Medicine*	1994-97	S	Prof. in charge/33%
VMPM 481D	Dairy Production Medicine**	1998-99	Su	50%
VMPM 481R	Small Ruminant Production Medicine	1998-2000	Su	10%
VMPM 590	Special Topics (dairy class)*	1996-2000	S	100%

TEACHING ASSISTANT MENTORING

Dr. Timms has developed an undergraduate teaching assistant mentoring program as part of his Animal Science 337 Lactation Biology course (also An Sci 435 Dairy Farm Evaluation). Most students are selected based on past class performance and interests in future teaching. Students formally present in each of the 3 topical sections of the class, are in charge of 1 of 3 in class laboratories, and chair one of the large class assignments (student presentations on their lactation papers or lactation bioethics point: counterpoint student debates). Students also help develop and grade quizzes / tests and co-evaluate and grade all student oral presentations. Students participate in all 3 review sessions with responsibilities for chairing one. Students are also expected to give a presentation based on their choice of lactation topics. Students perform self- evaluations on their performance, and are evaluated by class students in the final class evaluation.

TEACHING ASSISTANTS

<u>Student</u>	<u>Course</u>	<u>Year</u>	<u>Current position</u>
Sylvia Kehoe	AnSci 337 Lactation	2003	Faculty, UW River Falls
April Boll	AnSci 337 Lactation	2004	DVM
Jen Taylor	AnSci 337 Lactation	2005	DVM
Amanda Eason	AnSci 337 Lactation	2006	DVM
Amy Williamson	AnSci 337 Lactation	2006	DVM
Portia Allen	AnSci 337 Lactation	2007	DVM/ Mich State LAR Vet
Elizabeth Weighner	AnSci 337 Lactation	2007	DVM / dairy farm manager
Portia Allen*	AnSci 337 Lactation	2008	DVM/ Mich State LAR Vet
Katie Phipps	AnSci 337 Lactation	2008	Dairy Farm owner
Michael Slattery	AnSci 337 Lactation	2009	DVM
Bailey Goos	AnSci 337 Lactation	2009	DVM
Andrea Cook	AnSci 337 Lactation	2010	DVM
Elizabeth Gaul	AnSci 337 Lactation	2010	Dairy Farm owner
Kelly Jo Freiburger	AnSci 337 Lactation	2010	Nurse Midwife
Hannah Gesing	AnSci 337 Lactation	2011	Allen Nursing School
Nessa Moellers	AnSci 337 Lactation	2011	Sr. ISU College of Vet Med

Emily Ullerich	AnSci 337 Lactation	2011	Herdsperson, 800 cow dairy
Bethany Mordhorst	AnSci 337 Lactation	2012	MS North Dakota SU
Chelsea Onken	AnSci 337 Lactation	2012	Jr. ISU College of Vet Med
Brittany Shonka	AnSci 337 Lactation	2012	MS An Sci College of Ag
Matthew Costello	AnSci 337 Lactation	2013	Project Spec., CRV Genetics
Kathryn Gibson	AnSci 337 Lactation	2013	PhD student Vet Med, ISU
Joelle Merkes	AnSci 337 Lactation	2013	Dairy Farm manager
Brittany Shonka*	AnSci 337 Lactation	2013	PhD An Sci U of Minn
Brittany Kirkpatrick	AnSci 337 Lactation	2014	Mgr, Swine Breeding Farm
Melissa Hlavacek	AnSci 337 Lactation	2014	Fr. ISU College of Vet Med
Kali Johnson	AnSci 337 Lactation	2014	Fr. ISU College of Vet Med
Mackenzie Dickson	AnSci 337 Lactation	2014	Dairy Mgr., New Zealand
Sarah Dehotal	AnSci 337 Lactation	2015	Sr. Ag Business, ISU
Kevin Bauer	AnSci 337 Lactation	2015	Sr. Dairy Science, ISU
Erin Nolan	AnSci 337 Lactation	2015	Sr. Animal Science, ISU
Mike Bahl	AnSci 435 Dairy Eval.	2015	Sr. Dairy Science, ISU
German Carujo	AnSci 435 Dairy Eval.	2015	MS Animal Science, ISU

* Assumed additional responsibilities as a 2nd year teaching assistant, which included supervision/ evaluation of the 1st year teaching assistant.

UNDERGRADUATE STUDENT PROJECTS

- Most students are Animal Science 490B – Independent Study students. There are also honors students, internship projects, and a few personal projects (no credits).
- In addition to listed accomplishments, all students are required to complete a paper summarizing their project as well as evaluate their project and mentor.

UNDERGRADUATE STUDENT PROJECTS /ACCOMPLISHMENTS

<u>Student</u>	<u>Project</u>	<u>Years</u>	<u>Accomplishments</u>
Gary Pieper	Milk shelf life	1986-87	2 abstracts
Kent Pulfer	Environmental mastitis	1986-87	1 abstract
Glen Ohloff	Dry period mastitis	1986-87	1 abstract ADSA oral contest
Denise Bachelder	Antibiotic testing	1987	1 abstract
Cindy Clawson	Goat mastitis	1987	1 abstract
Jackie Friedrich	Colostrum quality	1987	1 abstract
Lisa Keehner	Dry period mastitis	1988	1 abstract
Pat Gorden	Vaginal conductivity / Milk P ₄	1988-90	2 abstracts *Gund Scholarship *ISU Achievement Foundation Scholar *International training video-Estrogenix
Lynae Engelken	Newspaper bedding	1990-91	2 abstracts *Stewart Research Scholar * National training video- Ft. Dodge AH
Mike Koester	Mastitis control	1991	Project on home farm
Phillip Gauger	Activity monitors/ reproduction	1991	1 abstract

			* Gund Scholarship
Eric Zachary	Activity monitors/ reproduction	1992	1 abstract * Gund Scholarship
Bob VanderSchaaf	ISU milking parlor remodel	1992	ISU Milking Center proposal
Brennan Smith	Milk progesterone	1993	1 abstract * Gund Scholarship
Judy Drost	Mastitis therapy Dry period mastitis Mycoplasma mastitis Activity monitors/ reproduction	1994-95	2 abstracts / 1 technical report 2 abstracts / 1 technical report 1 technical report 1 abstract / 2 technical reports
Anna Kokity	Activity monitors/ reproduction	1994-95	1 abstract / 1 technical paper
Carrie Hayes	Horse mastitis	1995	1 abstract / 1 technical report *MW ADSA student oral contest
Leah Trinity	Activity monitors/ reproduction	1995	1 abstract / 1 technical report *1 st place MW ADSA oral contest
Angela Menke	Activity monitors/ reproduction Mycoplasma bovis	1994-96	1 abstract / 2 poster presentations *invited presentation –Oregon ADSA * 3 rd place ADSA oral contest 1 technical report
Loren Wille	Sheep mastitis	1995-96	1 technical report
Craig Achen	Cow comfort – sand vs mattress	1996-97	Basis for 2 future abstracts
Stacia Piggott	Mastitis/ Reproduction	1996-99	3 abstracts / 5 technical reports
Andrea Steffens	Mastitis/ Reproduction	1996-99	3 abstracts / 5 technical reports *2nd place MW ADSA oral contest
Debra Fitkin	Mastitis/ Reproduction	1996-99	4 abstracts / 3 technical reports
Leah Allen	Dry period mastitis	1997-99	3 abstracts / 3 technical reports
Tami Schwartz	Teat health / integrity	1997	Basis for abstracts / reports
Justin Greenlee	Teat health / integrity	1997	Basis for abstracts / reports
Tony Krapfl	Teat health / integrity	1998	Basis for abstracts / reports
Laura McLees	Teat health / integrity	1998	Basis for abstracts / reports
Corrinne Barber	Dry period mastitis	1998	Basis for abstracts / reports
Jarred Freese	Teat health / integrity	1998-99	2 technical reports
Jenny Butler	Mycoplasma	1999-01	2 Refereed paper / 3 abstracts 4 technical reports *1st place poster: Nat'l. Micro Mtg. *2nd place MW ADSA oral contest
Amanda Reese	Dry period mastitis	1999-00	Basis for abstracts / reports
Andrea Sleugh	Clostridium	1999	Clostridium/ JHS literature review
Jessica Schnitzler	Mastitis / teat health	1999-02	4 technical reports *2003 Student of the year
Jen Rediske	Dry period mastitis	2000	Basis for abstracts / reports
Jen Bauer	Dry period mastitis	2000-02	Basis for abstracts / reports
Thomas Book	Starting a dairy farm	2000-01	2 Poster presentations
Tony Fredrickson	Starting a dairy farm	2000-01	2 Poster presentations
Jen Brumm	On farm nutrition investigation	2001	AnSci 320 presentation
Scott Wedemeier	Home farm mastitis project	2001-03	2 abstracts / 1 technical report *MW ADSA oral contest

Dimaris Trinidad	Heifer mastitis control	2002	Student paper
Cecilia Fernandez	Reproductive tools	2002-04	Technical report
Frances Zacharakis	Dry period mastitis	2002-03	Basis for abstracts / reports
Dawn Stendel	Teat health / integrity	2003	1 technical report
Sarah Balluff	Sheep dairying	2003	Took job in sheep dairy
Nick Slater	Teat health / integrity	2004	1 technical report / 1 poster presentation
April Boll	Mastitis culture / therapy	2004-05	2 technical reports 3 poster presentations
Lorilee Schultz	Home farm mastitis project	2004-06	1 abstract / 1 technical report *1 st place – An Sci Undergrad Poster *1 st place – SADSA original research
Laura Leazer	Home farm mastitis project	2005	Home farm mastitis plan
Sharon Greene	Home farm expansion plan	2005-06	Home farm expansion package
Jen Brase	Reproduction records / intern	2005	Current dairy DVM - Wisconsin
Lydia Moeller	Reproduction/ DHI records	2006	Current – reproduction consultant
Josh Corcoran	DHI records analysis	2006	Current – nutrition consultant
Mary Irlbeck	Home farm mastitis project	2006	Home farm mastitis plan
Cassie Ehrman	Teat health / integrity	2006	1 technical report / 1 poster presentation
Merle Bierman	Home farm mastitis project	2006-07	Home farm mastitis plan / sr. DVM stud.
Kris Saunders	Home farm mastitis project	2006-07	Home farm mastitis plan / sr. DVM stud.
Leah Gesing	Teat health / integrity	2006-08	Basis for abstracts / reports
Jessica Tekippe	Home farm mastitis project	2007	Home farm mastitis plan
Troy Meyer	Home farm expansion plan	2007	Home farm expansion package
Jeniece Bergman	Dairy plant internship	2007	Current – Dairy QA, KY
Franz Ortiz	Dairy energy policies	2007	1 white paper / 1 poster
Chad Fertig	Home farm analysis project	2007-10	Home farm analysis/ management
Monika Hepker	Goat dairying	2008-10	Goat dairy industry analysis
Cassandra Roe	Home farm sheep mastitis	2008	Home farm mastitis control plan
Zeb Gray	Home farm sheep mastitis	2009	Home farm mastitis control plan
Kendra Bolen	Dairy milk quality/safety issues	2009	1 abst.,SADSA Natl. dairy food comp.
Kaleena Westaby	Dairy genomics/ selection	2009	1 abst.,SADSA Natl. dairy prod. comp.
Jennifer Moorman	Dairy Nutrition/ Internship	2009	Presentation, Growmark Conference
Melinda Bechtel	Study abroad courses/ teaching	2009	Summer courses taught in Russia
Erin Johnson	Dairy farm analysis program	2009-10	On farm milk quality plans/ protocols
Jessica Juarez	Teat health, dry cow teat sealant	2008-09	2 MWADSA abst., 2010 UG contest *2 nd place –An Sci Undergrad Poster
Jessica Peters	New novel dry cow teat sealants	2009	1 MWADSA abst., UG poster contest
Kia Knutson	Teat health models / trials	2010	Completed 2 trials/ being analyzed 2 nd place: Science w/Practice Poster 2 nd place: An Sci Undergrad Poster Com.
Erin Hanson	Home farm analysis project	2010	Home farm milk quality program
Erin Johnson	Dairy farm analyses projects	2010	Kirk Christie Farm Milk Quality Plan
Stephanie Wells	Equine milk quality/composition	2011	Paper and poster presentations 2012 Animal Industry Report
Kelly Harryman	Sheep milk quality / mastitis	2011	Milk quality plan for commercial sheep operations
Emily Oeltjenbruns	Sheep milk quality / mastitis	2011	Home farm mastitis plan

Lindsey Kain	Equine milk quality/ composition	2012	2 papers (1 joint, 1 individual) 2013 Animal Industry Report
Kelly Harryman	Equine milk quality /composition	2012	2 papers (1 joint, 1 individual) 2013 Animal Industry Report
Alyssa Meyer	Equine milk quality/ composition / foal growth	2012	2 papers (1 joint, 1 individual) 2013 Animal Industry Report
Kelly Harryman	Small rum. milk quality/mastitis	2012	Milk quality plan for commercial sheep and goat operation
Leah Henkes	Dairy farm analyses projects	2012	Dairy herd analyses (home herd)
Derek Nolan	Dairy farm analyses projects	2012-13	Dairy herd analyses (2 herds)
Katie Adams	Dairy farm analyses projects	2012-13	Dairy herd analyses (home herd)
Dan Venteicher	Dairy farm analyses projects	2012-13	Dairy herd analyses (home herd)
Matt Henkes	Dairy farm analyses projects	2012-13	Dairy herd analyses (home herd)
Lacey Marshall- Lund	Klebsiella mastitis and environmental analyses	2012-13	2 papers, 1 presentation 3 rd place, Alltech Nat'l. Paper Contest
Karis Amano	SWP: companion animals	2012	SWP poster and presentation
Emily Smith	ISU Dairy farm research	2012-13	4 Animal Industry Reports
Allyn Ackermann	Equine milk quality/ composition	2013	2 papers (1 joint, 1 individual)
Victor Rey	Mare pre-foaling milk samples	2013	1 paper (joint)
Samantha Lobb	Mare and foal growth	2013	2 papers (1 joint, 1 individual)
Jakob Kemner	MUN / BUN in Mares	2013	2 papers (1 joint, 1 individual)
Jessica Sanders	Goat milk quality/mastitis	2013	Milk quality plan for goat operation
Matthew Costello	Dairy farm analyses projects	2013-14	Dairy herd analyses (home herd)
Amanda Franck	Dairy farm analyses projects	2013-14	Dairy herd analyses (home herd)
Erica O'Loughlin	Dairy farm analyses projects	2013-14	Dairy herd analyses (home herd)
Gina Fisher	Dairy farm analyses projects	2013-14	Dairy herd analyses (2 home herds)
Kyle Obmann	Dairy farm analyses projects	2013-14	Dairy herd analyses (home herd)
Tyler Gallagher	Dairy farm analyses projects	2013	Dairy herd analyses (home herd)
Ali Klein	Dairy farm analyses projects	2013	Dairy herd analyses (1 herd)
Corey VanOtegham	Dairy farm analyses projects	2014	Dairy herd analyses (home herd)
Melanie Matti	ISU Dairy farm research	2013-14	4 Animal Industry Reports
Brit Kirkpatrick	Evaluation: Equine MUN/BUN	2014	1 paper; 1 poster presentation
Emily Schwake	Foal growth estimation methods	2014	1 paper; 2 poster presentations
Kaitlin Coughlin	Mare colostrum quality testing	2014	1 paper, 1 poster presentation
Melissa Hlavacek	Mare milk composition/ quality	2014	1 paper, 2 poster presentations
Amber Ringgenberg	Pre Foaling secretion analyses	2014	1 paper, 1 poster presentation
Cory Colburn	Dairy nutrition /farm evaluation	2014	Nutrition audit of ISU Dairy; 1 paper; 2 poster presentations
Brad Zander	Dairy farm analyses projects	2014	Dairy herd analyses (home herd)
Mike Bahl	Dairy farm analyses projects	2014	Dairy herd analyses (home herd)
German Carujo	Dairy Farm Records analyses	2014	Multiple farm dairy analyses
Aislinn Pomfret	ISU Dairy Farm Research		3 Animal Industry Reports
Emily Neumiller	Dairy Milk Quality / Bird Control	2015	1 fact sheet, 1 paper, 2 poster present.

GRADUATE STUDENTS

* Served as major professor ** Served as research mentor

Student	Degree	Major	Year
Zondai Muyengwa **	M.S.	Animal Science	1986
Mark Lund	M.S.	Agricultural Economics	1988
Ismail Mumin**	M.S.	Animal Science	1990
Richard Riese**	M.S.	Vet Clinical Science	1991
Guftar Ahmad**	M.S.	Animal Science	1991
Michelle Brim*	M.S.	Animal Science	1992
Mustaq Jokhio*	M.S.	Animal Science	1994
Bob Welper	Ph.D.	Animal Breeding	1995
Eric Zachary**	M.S.	Masters of Agriculture	1995
Jose Nestor Caamano	Ph.D.	Animal Science	1999
Cole Pinnow	M.S.	Vet Microbiology	1999
Michael Pugh**	M.S.	Animal Science	1999
Mark Kirkpatrick	M.S.	Vet Med / Prev Med	2000
Mikal Lunak	Ph.D.	Animal Science	2001
Sarah Wagner	Ph.D.	Vet Pharmacology	2003
Josie Booth	Ph.D.	Animal Nutrition	2003
Carrie Hayes	Ph.D.	Animal Physiology	2003
Janice Jim	M.S.	Animal Physiology	2005
Debra Paulsen	M.S.	Animal Science	2005
Bruce Bearinger	M.S.	Masters of Agriculture	2006
Marianna Moreira	M.S.	Animal Physiology	2006
Nicole Tinfo	Ph.D.	Animal Physiology	2007
Richmond Aryeetey**	Ph.D.	Food Sci./ Human Nut.	2007
Danelle Bickett-Weddle	Ph.D.	Vet Med / Prev. Med.	2009
Kristen Hard	M.S.	Animal Physiology	2009
Margaret DenBeste	M.S.	Animal Physiology	2009
Patty Anderson	M.S.	Animal Physiology	2009
Tricia Blum	M.S.	Animal Physiology	2009
Erin Conrad	M.S.	Animal Physiology	2015e
Brooke McClure	M.S.	Meat Science	2009
Ginger Shipp	MS	Meat Science	2009
Joe Bender	M.S.	Vet Med / Prev Med	2010
Andy Herringshaw	M.S.	Sustainable Agriculture	2010
Jennifer Bentley	M.S.	Masters of Agriculture	2011
Kim Morrill	Ph.D.	Animal Physiology	2011
Nathan Upah	M.S.	Nutritional Physiology	2012
Jessica Juarez*	M.S.	Animal Science	2012
Tricia Wolfswinkle	Ph.D.	Animal Physiology	2015e
Analie Roca	M.S.	Animal Physiology	2015e
Amir Nayeri	M.S.	Nutritional Physiology	2012
Monique Pairis	Ph.D.	Animal Physiology	2014
Lacey Marshall-Lund	M.S.	Vet Med / Prev Med	2015

Alysha Gareis*	M.S.	Animal Nutrition	2014
Mohannad Abuajamieh	Ph.D.	Animal Nutrition	2015
Lacey Marshall-Lund	M.S.	Vet Med / Microbiology	2016
German Carujo*	M.S.	Animal Science	2016
Mohammad Al Qaisi*	Ph. D	Animal Science	2017

REFEREED JOURNAL ARTICLES

1. Greenlee, M.H., J. Smith, E. Platt, J. Juarez, **L. Timms**, and J. Greenlee. 2015. Changes in retinal function and morphology are early clinical signs of disease in cattle with bovine spongiform encephalopathy. PLOS ONE. (in press)
2. Arruda, A.G., S. Godden, P. Rapnicki, P. Gorden, **L. Timms**, S.S. Aly, T. Lehenbauer, and J. Champagne. 2013. Randomized non-inferiority clinical trial evaluating three commercial dry cow mastitis preparations: I. Quarter level outcomes. J. Dairy Sci. 96:4419.
3. Arruda, A.G., S. Godden, P. Rapnicki, P. Gorden, **L. Timms**, S.S. Aly, T. Lehenbauer, and J. Champagne. 2012. Randomized non-inferiority clinical trial evaluating three commercial dry cow mastitis preparations: II. Cow health and performance in early lactation. J. Dairy Sci. 96:6390.\
4. Ramu, S., C. Stamatkin, **L. Timms**, M. Ruble, R. Roussev, and E. Barnea. 2013. PreImplantation factor (PIF) detection in maternal circulation in early pregnancy correlates with live birth (bovine model). Reproductive Biology and Endocrinology. 11:105.
5. Aryeetey, R., G. Marquis, A. Lartey, **L. Timms**, and L. Brakohiapa. 2009. Evaluation of human subclinical mastitis on breast milk intake and child growth and performance. Breastfeeding Medicine Sept.; 4(3):161.
6. Aryeetey, R., G. Marquis, **L. Timms**, A. Lartey, and L. Brakohiapa. 2008. Subclinical mastitis is common among Ghanaian women lactating 3 to 4 months postpartum. J.Human Lactation. Aug; 24(3):263.
7. Lim, G., D. Kelton, K. Leslie, **L. Timms**, C. Church, and R. Dingwell. 2007. Herd management factors that affect the mean duration and variation of adherence of an external teat sealant in commercial Ontario dairy herds. J. Dairy Sci.:90. 1301.
8. Lim, G., K. Leslie, Kelton, D., T.F. Duffield, **L. Timms**, and R. Dingwell. 2007. Adherence and efficacy of an external teat sealant to prevent intramammary infections in the dry period. J. Dairy Sci.:90.1289.
9. Middleton, J.R., **L.L. Timms**, G.R. Bader, J. Lakritz, C.D. Luby, and B.J. Steevens. 2005. Effect of prepartum intramammary treatment with pirlimycin hydrochloride on prevalence of early first-lactation mastitis in dairy heifers. JAVMA. 227 (12):1969.
10. Dingwell, R.T. , K.E. Leslie, Y.H. Schukken, J.M. Sargent, **L.L. Timms**, T.F. Duffield, G.P. Keefe, D.F. Kelton, K.D. Lissemore, and J. Conklin. 2004. Association of cow and quarter level factors at drying off with new intramammary infections during the dry period. Preventative Veterinary Medicine. 63:75.

11. Dingwell, R.T., K.E. Leslie, Y.H. Schukken, J.M. Sargent, and **L.L. Timms**. 2003. Evaluation of the california mastitis test to detect an intramammary infection with a major pathogen in early lactation dairy cows. *Can. Vet. J.*:44:413.
12. Pinnow, C., J. Butler, K. Sachse, H. Hotzel, **L. Timms**, and R. Rosenbusch. 2001. Detection of *Mycoplasma bovis* in preservative treated field milk samples. *J. Dairy Sci.* 84:1640.
13. Kirkpatrick, M.A., **L.L. Timms**, K.W. Kersting, and J.M. Kinyon. 2001. Jejunal hemorrhage syndrome of dairy cattle. *Bovine Practitioner.* 35:2:104.
14. Pinnow, C., J. Butler, H. Hotzel, **L. Timms**, and R. Rosenbusch. 1998. *Mycoplasma bovis* detection in milk samples. *Nucleic Acid Amplification Assays for Diagnosis of Animal Diseases*. Edited by Lloyd H. Lauerman. 49-50.
15. **Timms, L.L.**, M.E. Kehrli and M.A. Ackermann. 1998. Histological features and results of virus isolation tests of tissues obtained from teat lesions developed in dairy cattle during winter. *JAVMA.* 213(6):862.
16. Dietz, A.B., N.D. Cohen, **L.L. Timms**, and M.E. Kehrli. 1997. Bovine lymphocyte antigen class II alleles as risk factors for high somatic cell counts in milk of lactating dairy cows. *J. Dairy Sci.* 80:406.
17. Faust, M. A. and **L.L. Timms**. 1995. Estimates of variability for somatic cell count measurements in the Iowa dairy industry. *J. Dairy Sci.* 78:546.
18. Ahmad, G., **L. L. Timms**, and D. Morrical. 1992. Dynamics and significance of ovine subclinical mastitis and their effects on lamb performance. *Sheep Res. J.* 8:1.25.
19. Ahmad, G., **L. L. Timms**, and D. Morrical. 1992. Ovine subclinical mastitis: Efficacy of dry treatment as a therapeutic and prophylactic measure. *Sheep Res. J.* 8:1.30.
20. Nonnecke, B. J., H. A. Lewin, and **L. L. Timms**. 1989. Preliminary report on BoLA polymorphism in Guernsey cattle. *J. Dairy Sci.* 72:3255.
21. **Timms, L. L.** and L. H. Schultz. 1987. Dynamics and significance of coagulase negative staphylococcal intramammary infections. *J. Dairy Sci.* 70:2648.
22. Fox, L. K., **L. L. Timms**, and L. H. Schultz. 1986. Changes in bovine milk secretion following intramammary infusions of concanavalin A, oyster glycogen, and water. *J. Dairy Sci.* 69:1259.
23. **Timms, L. L.** and L. H. Schultz. 1985. N-acetyl-B-D-glucosaminidase activity and somatic cells in goat milk. *J. Dairy Sci.* 68:3363.
24. **Timms, L. L.** and L. H. Schultz. 1985. N-acetyl-B-D-glucosaminidase in milk and blood plasma during the dry and early postpartum periods. *J. Dairy Sci.* 68:3367.
25. **Timms, L. L.** and L. H. Schultz. 1984. Mastitis therapy for cows with elevated somatic cell counts or clinical mastitis. *J. Dairy Sci.* 67:367.

PATENTS AND OTHER INTELLECTUAL PROPERTY ACCOMPLISHMENTS

For all patents, Carl Huprich provided the polymer compounds and Leo Timms provided the application of this compound to the mammary gland as a protective skin and was responsible for 100% of all trials, data analysis, and publications.

Huprich, C.A., **L.L. Timms**, and T.C. Hemling. May, 2007. Method and composition for coating wound or protecting animal skin. Canadian Patent # 2,283,852.

Huprich, C.A., **L.L. Timms**, and T.C. Hemling. February 2006. Method and composition for coating wound or protecting animal skin. Japanese Patent # 3716336.

Timms, L.L., October, 2001. Introduction of T-Hexx barrier dip technology (Hydromer, Inc.) to commercial market. Product development /testing conducted as part of mastitis research at ISU.

Huprich, C.A., **L.L. Timms**, and T.C. Hemling. September 2001. Method and composition for coating wound or protecting animal skin. European Patent No. 0973559.

Huprich, C.A., **L.L. Timms**, and T.C. Hemling. August 2001. Method and composition for coating wound or protecting animal skin. Australian Patent No. 731990.

Huprich, C.A., **L.L. Timms**, and T.C. Hemling. August 2000. Method and composition for coating wound or protecting animal skin. New Zealand Patent No. 337079.

Huprich, C.A., **L.L. Timms**, and T.C. Hemling. August 1999. Method and composition for coating wound or protecting animal skin. US Patent No. 5942239.

Huprich, C.A., **L.L. Timms**, and Iowa State University Research Foundation. 1997. Worldwide license for barrier dip technology to West Agro, Inc.

- Dip initially marketed in US (1998)
- > \$500,000 wholesale sales in year 1 (US)
- >\$800,000 retail sales in year 1 (US)
- Dip now marketed in > 40 countries with >\$3million/ year retail sales

Huprich, C.A., and **L.L. Timms**. December, 1997. Method and composition for coating wound or protecting animal skin. US Patent No. 5688498.

BOOKS AND BOOK CHAPTERS

1. **Timms, L.L.** and P. Gorden. 2015. Chapter 57: Lactation. Duke's Physiology of Domestic Animals. (in press)
2. Vasilev, N., J. Mitev, and **L. Timms**. 2010. Attention Mastitis. Stara Zagora, Bulgaria. 106 pages
3. Miteva, T., J. Mitev, I. Tsachev, I. Bozhkov, S. Stoev, I. Kanelov, and D. Tsolov. 2007. Biosecurity in Farm Animals. Stara Zagora, Bulgaria. (**Leo Timms - contributor**).

GRANTS AND CONTRACTS FUNDED (SOLE PI)

<u>Title</u>	<u>Grantor</u>	<u>Year(s)</u>	<u>Amount</u>
Evaluation of new iodine formulations for lactating teat dips	GEA Technologies	2015	\$18,000
Evaluation of new and commercial dry cow barrier teat dip sealants (2 trials)	DeLaval, Inc.	2014-15	\$6,000
Evaluation of new and commercial dry cow barrier teat dip sealants (2 trials)	Hydromer, Inc.	2014	\$2,000
Evaluation of new lactating cow barrier teat dips on teat health integrity	DeLaval, Inc.	2014	\$15,000
Evaluation of N-Force novel chlorine teat dip systems	GEA Technologies Zurex PharmaAgra, Inc.	2013-14	*3000 \$22,000
Evaluation of novel barrier teat dips and new chlorine dioxide activators	DeLaval, Inc.	2013-14	*3000 \$15,000
Evaluation of new and commercial dry cow barrier teat dip sealants (2 trials)	Hydromer, Inc.	2013	\$3,800
Evaluation of novel hypochlorous acid teat dips	Aquilabs, Inc.	2013	\$3500
Evaluation of novel iodine winter teat dips	DeLaval, Inc.	2012-13	*\$15,000 \$15,000
Evaluation of ECALogic teat dip systems	Zurex Pharma,	2012-13	*\$3,000 \$18,000
Evaluation of persistency of new and commercial dry cow barrier teat dip sealants	Hydromer, Inc.	2012	\$3,200
Evaluation of novel hydrogen peroxide teat dips	DeLaval, Inc.	2012	*\$18,000 \$15000
Evaluation of novel disinfectants for teat dips	Zurex Pharma, Inc.	2011	\$2000
Evaluation of new lactating cow barrier teat dips on teat health and cow performance	DeLaval, Inc.	2011	\$11,550
Development of new persistent barrier teat dips for preventing dry cow and fresh cow mastitis	DeLaval, Inc.	2011	\$2500
Evaluation of persistency of new and commercial dry cow barrier teat dip sealants	Hydromer, Inc.	2011	\$1500
Evaluation of new lactating cow teat dips on teat health and performance	DeLaval, Inc.	2010	\$15,000
Using teat skin colorimetry to measure teat dip persistency	DeLaval, Inc.	2010	\$10,000
Eval. of a novel hydrogen peroxide winter dip	A & L laboratories	2009	\$3000
Evaluation of new lactating cow teat dips on teat health and performance	DeLaval, Inc.	2009	\$15,000
Evaluation of new dry period teat sealant dips	Hydromer, Inc.	2009	\$1000
Evaluation of sodium chlorite teat dips	GEA Technologies, Inc.	2009	\$3000
Efficacy of Mast Out (nisin formulation) as an intramammary treatment for subclinical mastitis	Immucell, Inc.	2008-09	\$19,510
Evaluation of new barrier lactating cow teat dips on teat health and performance	DeLaval, Inc.	2008	\$15,000
Evaluation of new polymer lactating cow teat dips on teat health and performance	Hydromer, Inc.	2007	\$3500

Evaluation of a novel chlorine dioxide teat dip on teat health and performance	DEC- Boumatic, Inc.	2007	\$9000
Effects of feeding low/ high dietary cation-anion difference forages to periparturient dairy cows	USDA-ARS	2006-10	\$58,000
Factors affecting dry period mastitis/ teat closure	University of Guelph	2004	\$2000
Factors affecting dry period mastitis/ teat closure	University of Guelph	2003	\$2000
Factors affecting dry period mastitis/ teat closure	University of Guelph	2002	\$2000
Factors affecting dry period mastitis/ teat closure	University of Guelph	2001	\$2000
Factors affecting dry period mastitis/ teat closure	University of Guelph	2000	\$2000
Development/ coordination of VDPAM 413 (Dairy Production Medicine)	ISU College of Veterinary Medicine	1996	\$1750
Evaluation of mattresses vs. sand in tie stall barn	Dodgeland Ag Services	1996	*\$1200
Development and evaluation of novel skin protectants in dairy and other farm species	Huprich Corporation	1996-98	*\$2500
Evaluation of electronic pressure sensing mount devices for estrus detection in dairy cattle	DDX, Inc.	1995-98	*\$12,000
Development and evaluation of novel skin protectants in dairy and other farm species.	Huprich Corporation	1995-96	*\$1500
Field trial evaluation of electronic pedometers for estrus detection and breeding decisions.	Dairy Equipment Co.	1994-95	*\$40,000 \$5000
Electronic pedometers for estrus detection: pilot studies	Dairy Equipment Co.	1990-91	*\$10,000 \$1000
Establishing postpartum cyclicity using vaginal conductivity	ISU Achievement Foundation	1989-90	\$600
Dry period mastitis control	Iowa Dairy Products Assoc.	1990	\$1000
Evaluation of milk progesterone as a reproductive management tool	American Breeders Service	1991-92	*\$2000
Evaluation of milk progesterone as a reproductive management tool	Immucell, Inc.	1990-91	*\$5000
Evaluation of milk progesterone as a reproductive management tool		1990-91	*\$3600
Evaluation of milk progesterone as a reproductive management tool	Idexx, Inc.	1988-90	*\$3000
Evaluation of vaginal conductivity and milk progesterone for reproductive management	ISU University Research Grant / NIH	1987-88	\$2500
Evaluation of vaginal conductivity for reproductive management	Estrogenics, Inc.	1987-89	*\$3000 \$1000

Validation of a slow thaw procedure to obtain accurate milk component measurements in frozen samples	National DHIA	1988	\$1000
Development and validation of a thawing method to assure accurate measurements of milk components from frozen milk samples	Dairy Lab Services, Inc.	1985-88	*\$7500
Colostrum quality and management in dairy cattle	ISU University Research Grant / NIH	1987	\$2500
* Values denoted with an asterisk reflect product / technology or sample analysis donations	Donated products/ sampling	1985- pres.	\$123,300
	Grant / contract dollars	1985- 13	\$342,410
	Total contributions	1985-13	\$465,710

GRANTS AND CONTRACTS FUNDED (CO- PI)

Total funding as co-PI: \$1,042,579

ISU ANR Dairy Extension team (**L. Timms**, co- author). 2015-16. Paying it forward with a successful transition cow program. North Central Risk Management Education Center Grant Program. \$49,308.

ISU ANR Dairy Extension team (**L. Timms**, co- author). 2014-15. Organic Dairy Farm Analysis. Leopold Center for Sustainable Agriculture, Iowa State University. \$10,000.

ISU ANR Dairy Extension team (**L. Timms**, co- author). 2014-15. Implementing risk management decisions that optimize nutrient value of dairy manure while minimizing related risks.. North Central Risk Management Education Center Grant Program. \$49,890.

ISU ANR Dairy Extension team (**L. Timms**, co- author). 2013-14. Leave No Dairy Calf Behind by implementing calf feeding and management programs that reduce production risks. North Central Risk Management Education Center Grant Program. \$46,278.

ISU ANR Livestock and dairy extension teams (**L. Timms**). 2012-2014. Iowa Beginning and Young Livestock Producer Success Network. ISUEO VP for Extension Initiative Grants. \$156,054.

Timms, L. (author) and ISU Dairy Extension Team. 2012-13. Implementing milking risk management decisions incorporating low-cost parlors or automatic milking for healthy profitable dairies. North Central Risk Management Education Center Grant Program. \$49,159.

Baumgard, L., D.C. Beitz, **L. Timms**, and J. Shearer. 2011-2013 The effects of dietary Zn on production, metabolism and milk quality in transitioning dairy cows. Zinpro Corp. \$143,900. 2010-2012

Gorden, P. and **L. Timms**. 2010-11. Randomized non-inferiority clinical trial evaluating three commercial dry cow mastitis preparations. Boehringer Ingelheim, Inc. \$39,106.

Millman, S., J. Shearer, P. Gorden, B. Leuschen, and **L. Timms**. 2010-11. A novel look at hoof blocks for practical treatment of bovine lameness. Iowa Livestock Health Advisory Council. \$24,910.

Meyer, D.J., T. Richard, and **L.L. Timms**. 2005-07. Recycling Digested Manure Solids From Dairies. NCR-Conservation Innovation Grant (CIG). \$90,600.

Godden, S., R. Bey, R. Dingwell, K. Leslie, P.Ruegg, and **L.Timms**. 2004-08. Use of on farm culture systems for the strategic treatment of clinical and subclinical intramammary infections. Minnesota Agricultural Experiment Station. \$75,000.

Morin, D., **L. Timms**, J. Roberson, R. Erskine, and L.K. Fox. 2000. Multi-state evaluation of environmental streptococcus mastitis. (IA, IL, MI, VA, WA,). National Mastitis Council Research Foundation Grant (1st ever): \$5000.

Carson, T., M.A. Faust, T. Glanville, **L. Timms**, and S. Ensley. 1999. Impact of sulfate, dissolved solids, iron, and other drinking water quality parameters to on-farm performance and health of dairy cattle of Iowa. ILHAC grant. \$10,000.

M.R. Ackermann and **L.L. Timms**. 1997-98 Winter teat lesions in dairy cattle: development, progression, and therapeutic intervention. Iowa Healthy Livestock Advisory Council Grant, \$10,000.

Timms, L.L. and G.L. Lindberg. 1998. Dairy nutrition and facilities courses by collaborative distance education. Distance Education Experiment Grant - ISU. \$3000.

Timms, L. L. and P. Imerman (College of Vet. Med.) 1996. Direct on line HPLC method for analyzing beta lactam antibiotics in milk. ISU Special Research Initiative Grant. 1/1 - 6/31/96. \$7500.

Timms, L. L. and R. Rosenbusch (College of Vet Med). 1996. Mycoplasma bovis mastitis in Iowa dairy herds. Iowa Healthy Livestock Grant. \$10,000.

Sischo, B. L. Hutchinson, **L. Timms**, J. Reneau, P. Sears, W. Gilson, and W. Wailes 1995. TQM on the dairy farm: an integral part of a national food safety program. USDA-ES Competitive Food Safety Grant. \$108,000.

Rosenbusch, R. F. and **L. L. Timms** . 1995. Mycoplasma bovis mastitis in Iowa dairy herds. Iowa Healthy Livestock Grant. (7/1/95-6/30/96) \$17,500.

Sischo, B. L. Hutchinson, **L. Timms**, J. Reneau, P. Sears, W. Gilson, and W. Wailes. 1994. National project to apply TQM Practices to dairy farms. USDA-ES Competitive Food Safety Grant. \$77,374.

Hall, D. J. McKean, J. Morris, R. Orth, and **L.Timms**. 1992. Model TQM program for youth producers. USDA-ES Competitive Grant. \$60,000.

UNRESTRICTED GIFTS FOR EXTENSION AND RESEARCH ACCOMPLISHMENTS

<u>Company / Donor</u>	<u>Year</u>	<u>Amount</u>
Zurex PharmAgra, Inc.	2015	\$2,000
Zurex Pharma, Inc.	2010	\$1500
Hydromer, Inc.	2007	\$5000
Boumatic, Inc.	2007	\$2000
DeLaval, Inc.	2006	\$10,000
Ecolab, Inc.	2006	\$3000

West Agro, Inc.	2003	\$12,000
West Agro, Inc.	2002	\$5000
West Agro, Inc.	2001	\$5000
Alcide, Inc.	2001	\$2500
West Agro, Inc.	2000	\$9000
West Agro, Inc.	1999	\$2000
West Agro, Inc.	1998	\$2000
Pharmacia/ Upjohn	1997	\$2500
West Agro, Inc.	1997	\$5000
	Total	\$68,500

GRANTS AND CONTRACTS (PENDING)

Godden, S. et al. 2015 Evaluation and application of on-farm diagnostic tests for use in selective dry cow therapy programs on U.S. dairy farms. USDA-AFRI Competitive grants. \$500,000.

GRANTS AND CONTRACTS (NOT FUNDED)

Ruegg, P. et al. 2013. An integrated approach for reducing losses caused by bovine mastitis. NIFA Grant: USDA. \$1,000,000.

ISU ANR Livestock and dairy extension teams (**L. Timms**). 2012-2014. Iowa Beginning and Young Livestock Producer Success Network. USDA-NIFA. \$750,000.

Thakur, S. et al., 2012. Making the fresh produce industry more secure by reducing the burden of foodborne infections. NIFA Grant: USDA. \$3,000,000.

Ruegg, P. et al. 2012. Integrated Program for Sustaining High Quality Milk Production and Animal Welfare by Prevention of Mastitis and Responsible Use of Antimicrobials. NIFA Grant: USDA. \$3,000,000.

Bentley, J., **L. Timms**, and P. Gorden. 2010. Effects of milk handling pre and post pasteurization on milk quality prior to and feeding of neonatal calves. Iowa Livestock Health Advisory Council. \$20,000.

Schukken, Y. et al. 2010. The National Udder Health Program. MASCAP Grant: USDA. \$5,000,000.

Frana, T., E. Strait, J. Kinyon, P. Plummer, P. Gorden, and **L. Timms**. 2009-10. Isolation and characterization of methicillin resistant Staphylococcus aureus from milk samples. Iowa Livestock health Advisory Council. \$24,450

Kariyawasam. S., W. Kim, **L. Timms**, J. West, B. Leuschen, J. Kinyon, and K.J. Yoon. 2007-09. Development of a multiplex PCR for simultaneous detection of bovine mastitis causing bacteria in bulk milk. IVMA Bovine Research proposal. \$24,480.

Bender, H, D. Bickette-Weddle, **L. Timms**, J. West, P. Vermeer, J. Danielson, and E. Mills. 2006. Biosecurity on the farm: use of the diagnostic pathfinder to train the next generation of veterinarians. USDA CSREES NRI Higher Education Challenge Grant: \$129,147.

Meyer, D.J., T. Richard, and **L.L. Timms**. 2003. Making tie stall and free stall barn bedding cost effective. NCR-SARE . \$34,000.

Hutjens, M. **L.L. Timms**, J. Keown, J. Linn, R. Shaver, and A. Brannstrom. 2003. Midwest information delivery system: a research and extension model. Illinois Agricultural – Telecommunications. \$38,890.

Timms, L.L. et al. 2001. Enhancing cost effective dairy production and marketing strategies. USDA CSREES IFAFS Lead author and editor for 6 state project. \$3,485,969 (top 20% but not funded).

Timms, L.L. 2001 Midwest dairy partnership: Dairy quality assurance and profitability. USDA CSREES IFAFS State leader: \$475,305 (subcontract of a \$4.6 million proposal).

Powers, W. and **L.L. Timms**. 2000 Innovative methods of estrus detection to improve female:male ratios in lactating dairy cows. ISU SPRIG grant: \$11,800.

Rosenbusch, R. and **L.L. Timms**. 1996. Epidemiological study assessing the risks to newborn calves associated with feeding *Mycoplasma bovis* contaminated milk. National Research Initiatives Competitive Grant Program. \$209,784.

PUBLISHED ABSTRACTS

1. Robinson, A.L., **L. Timms**, K. Stalder, and H. Tyler. 2014. Effect of four antiseptic compounds on umbilical cord healing and infection rates in the first 24 hours in dairy calves from a commercial dairy herd. J. Dairy Sci. E-Suppl 1.
2. **Timms, L.**, M. Pawlak, and C. Durham. 2013 Evaluation of chlorine level stability in a novel teat dip disinfectant system. J. Dairy Sci. E-Suppl 1.
3. **Timms, L.**, M. Pawlak, and C. Durham. 2013 Development and evaluation of experimental chlorine technology pre and post milking teat dips on teat end and teat skin condition and health. J. Dairy Sci. E-Suppl 1.
4. Smith, E., **L. Timms**, M. Pawlak, and C. Durham. 2013 Evaluation of experimental chlorine technology pre and post milking teat dips vs. a commercial hydrogen peroxide pre dip and iodine barrier post milking teat dip on teat end and teat skin condition and health. J. Dairy Sci. E-Suppl 1.
5. Fogsgard, K., M. Herskin, P. Gorden, A. O'Connor, **L. Timms**, and S. Millman. 2012. Survey of management and design of hospital pens on Iowa dairy farms. Dairy Cattle Welfare Symposium, Guelph, Ontario.
6. Arruda, A., S. Godden, P. Rapnicki, P. Gorden, **L. Timms**, S. Aly, T. Lehenbauer, and J. Champagne. 2012. Preliminary results from a non-inferiority clinical trial: Ability of three commercial dry cow mastitis preparations to cure intramammary infections present at dry off. AABP Proceedings.
7. Juarez, J. and **L. Timms**. 2010. Evaluation of prototype and commercial sodium chlorite (base/ activator) pre-post milking teat dips on teat end and teat skin condition and health. J. Dairy Sci. E-Suppl 1.

8. Peters, J. and **L. Timms**. 2010 Evaluation of dripping and drying characteristics, teat coverage persistency, and teat health for two prototype and one commercial dry period persistent barrier teat dips. *J. Dairy Sci. E-Suppl.* 1.
9. Bolen, K. and **L. Timms**. 2009. Consumer fluid milk choices: balancing nutrition, safety, cost, and emotions. *J. Dairy Sci.* 92. *E-Suppl* 1:242.
10. Aryeetey, R., G. Marquis, **L. Timms**, A. Lartey, and L. Brakohiapa. 2009. Subclinical mastitis among Ghanaian 3-6 months postpartum. International Congress of Nutrition, Bangkok, TH.
11. Aryeetey, R., G. Marquis, **L. Timms**, A. Lartey, and L. Brakohiapa. 2008. Is subclinical mastitis associated with reduced infant breast milk intake in Ghana. 14th Int. Conf., Int. Soc. Research in Human Milk and Lactation. Abstract 26.
12. **Timms, L.** and J. Morelli. 2008. Teat end and skin conditioning evaluation of two experimental heptanoic acid teat dips during winter. *J. Dairy Sci.* 91. *E-Suppl.*1:302.
13. **Timms, L.** 2008. Evaluation of a novel chlorine dioxide teat dip on teat end and teat skin health. *J. Dairy Sci.* 91. *E-Suppl.*1:302.
14. **Timms, L.** 2008. Characteristics and use of separated manure solids following anaerobic digestion for dairy freestall bedding in three Iowa dairy herds. *J. Dairy Sci.* 91. *E-Suppl.*1:323.
15. Aryeetey, R., G. Marquis, **L. Timms**, A. Lartey, and L. Brakohiapa. 2007. Evaluating simple diagnostic tests for subclinical mastitis among Ghanaian lactating women. *The FASEB Journal.* 2007;21:678.9.
16. Meyer, D., **L. Timms**, R. Burns, and L. Moody. 2007. Recycling digested manure solids from dairies. ASABE Sixth International Dairy Housing Conference.
17. Lago, A., S. Godden, R. Bey, K. Leslie, R. Dingwell, P. Ruegg, and **L. Timms**. 2006. Preliminary validation of an on-farm culture system. *J. Dairy Sci.* 89 (Suppl. 1): 199.
18. Schultz, L. and **L.L. Timms** 2005. Case study of prevention and therapy strategies in a high somatic cell count herd. *J. Dairy Sci.* 88 (Suppl. 1): 97.
19. **Timms, L.** 2004. Mastitis diagnostics, prevention, and therapy technologies and strategies for transition cows and heifers. *J. Dairy Sci.* 87 (Suppl. 2): 15.
20. Paulsen, D. and **L.L. Timms**. 2003. Evaluation of a salve or two novel winter teat dips to maintain or enhance teat end integrity during winter. *J. Dairy Sci.* 86 (Suppl. 2): 14.
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TECHNICAL REPORTS/ SYMPOSIA / CONFERENCE PROCEEDINGS

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3. MDA Technical fact sheet: Milk and Hormones. 2014. Developed and edited by MDA staff in conjunction with MDA Scientific Advisory Council* (**L. Timms**, technical editor).
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36. **Timms, L.** Update backgrounder on new ISU dairy farm. College of Agriculture, ISU. May 2006.
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52. **Timms, L.L.** 1996. Winter teat end lesions. Health Traits Newsletter. Vol 2 No. 2. Fall 1996.
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A) Iowa State Veterinary Medicine Extension Newsletter

1. Milk Progesterone Tests: Characteristics and Costs.
2. Not All Cows Bred Are In Heat.
3. Low Somatic Cell Counts and Mastitis Infection Risks.
4. Winter Teat Dipping Tips. (revised)
5. Teat Dipping Facts.
6. Subclinical Mastitis Treatment Based on Somatic Cell Count.
7. Checkpoints for Reproduction.
8. Predipping: Opportunities and Problems (revised)
9. Premilking Sanitation: Essential for Milk Quality.
10. Winter Teat Dipping Tips.
11. Iodine-in-Oil Teat Dips Fail to Perform.
12. Predipping: Opportunities and Problems.
13. Intramammary Devices for Mastitis Prevention.
14. Barrier Teat Dips for Dry Cows.
15. Mastitis Notes: Dry Cow Management.

B) American Association of Bovine Practitioners National Newsletter

1. Winter Teat Dipping Tips.
2. Predipping: Opportunities and Problems.
3. Infection Dynamics in First Lactation Animals.
4. Intramammary Devices for Mastitis Prevention.
5. Pseudocowpox

C) Udder Topics: National Mastitis Council Newsletter

1. Infection Dynamics in Beef, Sheep, and Swine.
2. Barrier Dips Persist 1-21 Hours.
3. Freezing Milk Samples.
4. Infection Dynamics in First Lactation Animals.

5. Barrier Teat Dips for Dry Cows.
6. NAGase : Dry Period and Early Postpartum.
7. Minor Pathogen Dynamics.

POPULAR PRESS ARTICLES

1. **Timms, L.L.** 2013. Elimination of winter teat dipping invites problems. Hoard's Dairyman. December 2013.
2. **Timms, L.L.**, 2013. Farmers and infrastructure team up to make Iowa dairy strong. Iowa Farm Bureau Spokesman. June 19, 2013.
3. Tranel, L., J. Bentley, **L. Timms**, and K. Schulte. Low-cost milking parlor owners are still happy. Hoard's Dairyman. June 2013.
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5. **Timms, L.L.** 2012. Recent Iowa dairy survey hints at nationwide trends. Progressive Dairy. January 2013.
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12. **Timms, L.L.** 2010. All in a Good Day's Rest. Midwest Dairy Assoc. Dairy Makes Sense Blog. May. <http://www.midwestdairy.com/0p48be15/all-in-a-good-days-rest/>.
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14. **Timms, L.** 2009. Smooth, supple, healthy teats. Progressive Dairyman. Dec 11, 2009.
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19. **Timms, L.L.** 2007. Control winter teat problems. Dairy Herd Management. February, 2008.
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21. **Timms, L.L.** 2006. Winter teat dips no substitute for good management. Farm Flash. Hoard's Dairyman. February 25, 2005
22. **Timms, L.L.** 2005 What's normal for teat shape. Hoard's Dairyman. January 25, 2005
23. **Timms, L.L.** 2005 What can the CMT tell us about fresh cows. Hoards Dairyman. May 10, 2005.

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VIDEO / COMPUTER EDUCATIONAL PRESENTATIONS / TOOLS (shared with others)

1. **Timms, L.** 2013. 2012 Iowa Dairy Survey summary and interpretations. (powerpoint presentation)
2. **Timms, L.** 2013. ISU Dairy Extension team 2013 (powerpoint presentation)
3. **Timms, L.** 2013. The Iowa Dairy Industry. (powerpoint presentation)
4. **Timms, L.** 2013. Dairy Production Systems 2012. (powerpoint presentation)
5. **Timms, L.** 2013. Understanding and using DHI records (powerpoint presentation)
6. **Timms, L.** and L. Metzger. 2013. Hormones in food: addressing some common questions. MDA Dairy Academies and other MDA training workshops and website.
7. **Timms, L.** 2013. Feeding distillers to dairy. Potentials and limitations. (powerpoint presentation)
8. **Timms, L.** 2013. Dairy systems sustainability. (powerpoint presentation)
9. **Timms, L.** 2013. Balancing your SCC and on farm udder health program. (powerpoint presentation)
10. **Timms, L.** 2013. Dairy Systems risk. (powerpoint presentation)
11. **Timms, L.** 2013. Aflatoxin in milk. (powerpoint presentation)
12. **Timms, L.** 2013. School nurse programs and dairy farms: Similarities and differences. (ppt.)
13. **Timms, L.** 2013 Milk safety and quality begins on farm. MDA Dairy Retail Academies (ppt.)
14. **Timms, L.** 2013 On-farm production practices. MDA Dairy Retail Academies (ppt.)
15. **Timms, L.** 2013 Sustainability begins at the farm. MDA Dairy Retail Academies (ppt.)
16. **Timms, L.** and J. Reneau. 2013. Recycled dairy beddings: bane or blessing? UMDIA/ IAFP spring conferences.
17. **Timms, L.** and Sandy Goff. 2012. National FARM Certification Training materials.
18. **Timms, L.** 2012. ISU Dairy Extension team 2012 (powerpoint presentation)
19. **Timms, L.** 2012. The Iowa Dairy Industry. (powerpoint presentation)
20. **Timms, L.** 2012. Dairy Production Systems 2012. (powerpoint presentation)
21. **Timms, L.** 2012. Iowa's "Local" Dairy Industry: Opportunities and challenges (ppt.)
22. **Timms, L.** and L. Metzger. 2012. Hormones in food: addressing some common questions. MDA Dairy Academies and other MDA training workshops and website.

23. **Timms, L.** 2012. Automatic milking systems. ISUEO Dairy Team Milking Systems webinar.(ppt.)
24. **Timms, L.** 2012. Low cost milking parlors. ISUEO Dairy Team Milking Systems webinar.(ppt.)
25. **Timms, L.** 2012. Balancing your SCC and on farm udder health program. (ppt.)
26. **Timms, L.** 2011. Milking machine basics for small ruminant dairy producers. National Goat Expo.
27. **Timms, L.** 2011. Milking machine troubleshooting for small ruminant dairy producers. National Goat Expo. (ppt.)
28. **Timms, L.** 2012. Getting the jump on small ruminant milk quality. Multi State Small Ruminant webinar. (ppt.)
29. **Timms, L.** 2012 Milk safety and quality begins on farm. MDA Dairy Retail Academies (ppt.)
30. **Timms, L.** 2012 On-farm production practices. MDA Dairy Retail Academies (ppt.)
31. **Timms, L.** 2012 Sustainability begins at the farm. MDA Dairy Retail Academies (ppt.)
32. **Timms, L.** and J. Reneau. 2012. SCC milk quality standards: 400,000. What does it mean for our industry? UMDIA/ IAFP spring conferences.
33. **Timms, L.** and Sandy Goff. 2011. Pictures and video at ISU Dairy to be used for national FARM training dairy quality assurance program.
34. **Timms, L.** 2011. ISU Dairy Extension team 2010 (powerpoint presentation)
35. **Timms, L.** 2011. The Iowa Dairy Industry. (powerpoint presentation)
36. **L. Timms.** 2011. Dairy Production Systems 2011. (powerpoint presentation)
37. **Timms, L.** 2011. Iowa's Dairy Industry: Homegrown Solutions for Healthy Iowans Through Sustainable Dairy Systems. Iowa Foods Systems Council.
38. **Timms, L.L.** 2011. Milk quality / mastitis control in small ruminants. Ohio CES webinar.
39. **Timms, L.L.** 2011. Do different dairy farm practices affect milk's safety and quality? MDA Dairy Academies and FSHN 208X
40. **Timms, L.L.** 2011. Role of Nutrition in Milk Quality and Mastitis Control. Blue Seal Feeds webinar.
41. **Timms, L.L.** 2011. Balancing your SCC and on farm udder health program. (ppt.)
42. **Timms, L.L.** 2011. Milking machine basics for small ruminant dairy producers. Minnesota Dairy Goat Breeders Conference. (ppt.)
43. **Timms, L.L.** 2011. Milking machine troubleshooting for small ruminant dairy producers. Minnesota Dairy Goat Breeders Conference. (ppt.)
44. **Timms, L.L.** 2011. Getting the jump on goat milk quality. Minnesota Dairy Goat Breeders Conference. (ppt.)
45. **Timms, L.L.** 2011. Evaluating your on farm udder health program. Elanco Dairy Consultants Workshop. (ppt.)
46. **Timms, L.** 2011 Milk safety and quality begins on farm. MDA Dairy Retail Academies (ppt.)
47. **Timms, L.** 2011 On-farm production practices. MDA Dairy Retail Academies (ppt.)
48. **Timms, L.** 2011 Sustainability begins at the farm. MDA Dairy Retail Academies (ppt.)
49. **Timms, L.** and J. Reneau. 2011. SCC beyond EU measures. UMDIA/ IAFP spring conferences.
50. **Timms, L.L.** 2010. Evaluating your on farm udder health program. Blue Seal Feeds webinar.
51. **Timms, L.L.** 2010. Breed 'em or weep: heifer and cow reproduction \$. (ppt.)
52. **Timms, L.L.** 2010. Winter management and teat conditioning. (ppt and webinar).
53. **Timms, L.L.** 2010. Current Dairy Issues: SCC, FARM, and SMS. (ppt.)
54. **Timms, L.L.** 2010. Many faces of the Iowa and US dairy industry. (ppt)
55. **Timms, L.L.** 2010. Milk quality and mastitis control. Bulgaria, U.S., and the world (ppt)
56. **Timms, L.L.** 2010. Introduction / Balancing SCC Module. Milk Quality Workshops.
57. **Timms, L.L.** 2010. Lactating Cow Module. Milk Quality Workshops.

58. **Timms, L.L.** 2010. Dry/Transition Cows and Heifer Module. Milk Quality Workshops.
59. **Timms, L.L.** 2010. Milking Module. Milk Quality Workshops.
60. **Timms, L.L.** 2010. Dealing with Problem Cows Module. Milk Quality Workshops.
61. **Timms, L.L.** 2009. Dairy Trivia: Do we really know our dairy industry? (ppt.)
62. **Timms, L.L.** 2009. Dairy production systems and sustainability. (ppt. and programs)
63. **Timms, L.L.** 2009. Evaluating your on farm udder health program (Spanish translation ppt.)
64. **Timms, L.L.** 2009. Milking cows: New technologies or same old routine? (Spanish translation)
65. **Timms, L.L.** 2009. Getting the jump on small ruminant mastitis and milk quality.(ppt.)
66. **Timms, L.L.** 2008 ISU Dairy Program Poster Display: 1) ISU Dairy Science Program; 2) ISU Dairy Farm; and 3) ISU Extension Dairy Team.
67. **Timms, L.L.** 2007.Evaluating your on farm udder health program: how you know it is working?(ppt)
68. **Timms, L.L.** 2007.Teat problems caused by winter conditions: what have we learned? (ppt).
69. **Timms, L.L.** 2007.Nutrition and mastitis: food for thought (ppt – 4 conferences))
70. **Timms, L.L.** 2007.DHIA individual cow, herd summary, and quilting workshop (ppt. / coordinator/ presenter)
71. **Timms, L.L.** 2007.Monitoring milk production (ppt.)
72. **Timms, L.L.** 2007.It's a matter of inches + time = \$\$ (cow comfort and dairy facilities ppt.)
73. **Timms, L.L.** 2007.Many faces of the Iowa dairy industry.(ppt.:conferences; myself/other dairy staff)
74. **Timms, L.L.** 2007.Iowa dairy industry development: current programs and initiatives. (ppt.)
75. **Timms, L.L.** 2007.An overview of ISU dairy extension (ppt.)
76. **Timms, L.L.** 2007.New ISU dairy farm: a virtual tour. Adobe presentation (20 min).
77. **Timms, L.L.** 2007.Mastitis in ewes and its control. (ppt: IA and WI sheep educational programs).
78. **Timms, L.L.** 2006. Milk quality issues in heifers and transition cows. (ppt. presentation-WVMA, Dairy Focus, NS, CA))
79. **Timms, L.L.** 2006. Teat problems caused by winter conditions: what have we learned? (ppt.)
80. **Timms, L.L.** 2006. Sleeping and mastitis: both need good bedding. (ppt. – MW Dairy Health Conf.)
81. **Timms, L.L.** 2006. Milking fresh cows more often with shorter dry periods (ppt.- WVMA Conf.)
82. **Timms, L.L.** 2006. AnSci 337 Lactation Biology ICN (4 classes) (ICN coordinator and presenter)
83. **Timms, L.L.** 2006. Nutrition and mastitis: food for thought (ppt. – summer NMC and Zinpro Dairy Conference)
84. **Timms, L.L.** 2006. DHIA individual cow, herd summary, and quilting workshop (ppt., coordinator/ presenter)
85. **Timms, L.L.** 2006. Milk quality standards and mastitis fundamentals. (ppt.)
86. **Timms, L.L.** 2006. The many faces of the Iowa dairy industry. (ppt.)
87. **Timms, L.L.** 2006. Iowa dairy industry development: current programs and initiatives. (ppt.)
88. **Timms, L.L.** 2006. Milking cows: new technologies / ideas or same old routine (ppt.)
89. **Timms, L.L.** 2006. Cozying up with cow comfort (ppt.)
90. **Timms, L.L.** 2006. Milking machine basics (ppt.)
91. **Timms, L.L.** 2006. Team approach to an acute milk quality problem (ppt.; VDPAM 411 module)
92. **Timms, L.L.** 2006. An overview of ISU dairy extension (ppt.)
93. **Timms, L.L.** 2006. Monitoring reproduction: old / new / invisible. (ppt.)

94. **Timms, L.L.** and A. Boll. 2006. Use of the California mastitis test and an on-farm culture system for strategic identification and treatment of clinical and fresh cow subclinical intramammary infections (Honors poster presentations with April Boll)
95. **Timms, L.L.** and C. Mondak. 2006. Inside a modern dairy farm: (Poster display jointly developed for use at dairy events / shows / etc.)
96. **Timms, L.L.** 2005. Milk quality issues in heifers and transition cows. (ppt.)
97. **Timms, L.L.** 2005. Maintaining healthy teats: problems and solutions. (ppt.)
98. **Timms, L.L.** 2005. Dairy Day ICN Training session for local veterinary presenters Jan. (Total program coordinator and presenter)
99. **Timms, L.L.** 2005. Using DHI records to assess reproduction, somatic cell counts, and quilting. (ppt.)
100. **Timms, L.L.** 2005. Animal Science 337 Lactation Biology ICN (4 classes) (ICN coordinator and presenter)
101. **Timms, L.L.** 2005. Integrated herd health on the dairy. NEIDF New and Transitioning Dairy ICN Course(ppt. and ICN coordinator and presenter)
102. **Timms, L.L.** 2005. Dairy reproduction and genetic selection . NEIDF New and Transitioning Dairy ICN Course(ppt. and ICN coordinator and presenter)
103. **Timms, L.L.** 2005. Mycoplasma mastitis and more. (ppt.)
104. **Timms, L.L.** 2005. The many faces of the Iowa dairy industry. (ppt.)
105. **Timms, L.L.** 2005. Iowa dairy industry development: current programs and initiatives. (ppt.)
106. **Timms, L.L.** 2005. Capturing energy efficiencies and their by-products on dairy farms (ppt.)
107. **Timms, L.L.** 2005. A youth approach to understanding lactogenesis (ppt.)
108. **Timms, L.L.** 2004. Dairy Day ICN Training for local veterinary presenters Jan. (Total program coordinator and presenter)
109. **Timms, L.L.** 2004. AnSc 337 Lactation Biology ICN (3 classes) (ICN coordinator and presenter)
110. **Timms, L.L.** 2004. Dairy cow culling strategies: BSE ISU Satellite Program Jan. (presenter /ppt.)
111. **Timms, L.L.** 2004. Goat milk quality and mastitis. (ppt.)
112. **Timms, L.L.** 2004. Milk quality issues in heifers and transition cows. (ppt.)
113. **Timms, L.L.** 2004. Winter conditions and teat health. (ppt.)
114. **Timms, L.L.** 2004. Dry period length: how short is long enough (ppt.)
115. **Timms, L.L.** 2004. Monitoring milk production (ppt.)
116. **Timms, L.L.** 2004. So you wanna be average (ppt.)
117. **Timms, L.L.** 2004. Successful methods for controlling SCC. (ppt.)
118. **Timms, L.L.** 2004. Getting a jump on heifer mastitis. (ppt.)
119. **Timms, L.L.** 2004. Getting the jump on goat milk quality. (ppt.)
120. **Timms, L.L.** 2004. Milking management for goats. (ppt.)
121. **Timms, L.L.** 2004. Mastitis prevention and teat health in goats. (ppt.)
122. **Timms, L.L.** 2004. Milking machine basics: parts and functions. (ppt.)
123. **Timms, L.L.** 2004. An overview of dairy research and extension programs at ISU. (ppt.)
124. **Timms, L.L.** 2004. Animal health issues: International Hoops Conference. (ppt.)
125. **Timms, L.L.** 2004. The many faces of the Iowa dairy industry. (ppt.)
126. **Timms, L.L.** 2004. Iowa dairy industry development: current programs and initiatives. (ppt.)
127. **Timms, L.L.** 2004. DHI udder health, reproduction, and quilting workshop. (ppt.)
128. **Timms, L.L.,** 2003. Transition Cow ICN Series. Jan-Feb. (Total program coordinator)
129. **Timms, L.L.,** 2003. Transition Cow Veterinary CE ICN Series. Jan-Feb. (Total program coordinator)
130. **Timms, L.L.,** 2003. Dairy Day ICN Training session for local veterinary presenters Jan. (Total

- program coordinator and presenter)
131. **Timms, L.L.**, 2003. Iowa Association for Food Protection board meetings via ICN. March / July (program coordinator)
 132. **Timms, L.L.**, 2003. AnSci 337 Lactation Biology ICN (3 classes) (ICN coordinator and presenter)
 133. **Timms, L.L.**, 2003. Photoperiod management for dairy animals (ppt.)
 134. **Timms, L.L.**, 2003. Frequent milking in early lactation – does it pay? (ppt.)
 135. **Timms, L.L.**, 2003. Milk quality issues in heifers and transition cows. (ppt.)
 136. **Timms, L.L.**, 2003. Heat detection tools and rules. (ppt.)
 137. **Timms, L.L.**, 2003. Current dairy research at ISU (ppt.)
 138. **Timms, L.L.**, 2003. Iowa dairy industry and ISU dairy programs (ppt.; poster displays)
 139. **Timms, L.L.**, 2003. Dairy production systems (ppt.)
 140. **Timms, L.L.**, 2003. Mycoplasma: mastitis and more. (ppt.)
 141. **Timms, L.L.**, 2003. Getting a jump on heifer mastitis. (ppt.)
 142. **Timms, L.L.**, 2002. Maintaining healthy teats: problems and solutions. (ppt.)
 143. **Timms, L.L.**, 2002. Hemorrhagic bowel syndrome: (ppt.)
 144. **Timms, L.L.**, 2002. Intensive grazing for dairy cattle ICN program. April. (ICNcoordinator)
 145. **Timms, L.L.**, 2002. Photoperiod management for dairy animals (ppt.)
 146. **Timms, L.L.**, 2002. Dairy Facilities Conference ICN program. March. (co chair and ICN coordinator)
 147. **Timms, L.L.**, 2002. Dairy Trans training – November. (ICN coordinator)
 148. **Timms, L.L.**, 2002. What’s new in mastitis control. (ppt.)
 149. **Timms, L.L.**, 2002. Mastitis control, prevention, and treatment in sheep. (ppt.)
 150. **Timms, L.L.**, 2002. Dairy milker school. (ppt.)
 151. **Timms, L.L.**, 2002. Dairy milker school curriculum (ppt., videos, and hands on workshops).
 152. **Timms, L.L.**, 2002. Teat condition portfolio – CD Rom developed by Teat Club International
 153. **Timms, L.L.** 2001. Heat detection : tools and rules. Ppt. program for CHIPS and beef program.
 154. **Timms, L.L.** 2001. Photoperiod for enhanced milk production, growth, and reproduction. (ppt.)
 155. **Timms, L.L.** and F. Christiansen. 2001. PC-Dart training CD-ROM developed for VDPAM 484 and other vet med and An. Sci. classes (including CE classes for vets/ agri- business): dairy management software plus 30 herd cases.
 156. **Timms, L.L.**, C. Taylor, and Y. Kirkpatrick. 1999. Web based mastitis field case study.
 157. **Timms, L.L.** 1999. Mastitis control pre-calving module. 4 State CD-Rom on transition cow management developed for national distribution.
 158. **Timms, L.L.** 1999. Mastitis control calving- post calving module. 4 State CD-Rom on transition cow management developed for national distribution.
 159. **Timms, L.L.** and F. Christiansen. 1999. PC-Dart training CD-ROM developed for AS493L and other classes (including CE classes for veterinarians and agri-business)
 160. **Timms, L.L.** 1994. Development of a Model National TQM Program for Youth Livestock Producers. Scriptwriting and technical editing of the three dairy TQM videos.

INVITED TALKS / PRESENTATIONS

1. Feeding distillers to dairy: potential and limitations. Seminar for Moroccan Nutrition leaders in conjunction with Iowa Corn Board and US Feed Grains Council. Ames, IA. December 12, 2013.
2. On-farm practices and food safety. MDA Dairy Retail Academy. Rochester, MN. Nov. 13, 2013.
3. Sustainability and the dairy industry. MDA Dairy Retail Academy. Rochester, MN. Nov. 13, 2013.

4. Stray voltage principles and issues. Special Iowa Legislative Committee. Des Moines, IA. Oct. 28, 2013.
5. Dairy Farm Workshops and Tours for Gilbert Elementary Schools (130 students and faculty; in cooperation with ISU Dairy Science Club). Ames, IA. October 18, 2013.
6. On-farm practices and food safety. MDA Dairy Retail Academy. Sioux Falls, SD. Oct. 10, 2013.
7. Sustainability and the dairy industry. MDA Dairy Retail Academy. Sioux Falls, SD. Oct. 10, 2013.
8. On-farm practices and food safety. MDA Dairy Retail Academy. Sioux City, IA. Oct. 9, 2013.
9. Sustainability and the dairy industry. MDA Dairy Retail Academy. Sioux City, IA. Oct. 9, 2013.
10. Dairy Iowa. (keynote joint presentation with Larry Shover, president of ISDA and chair of Dairy Iowa). Iowa Association for Food Protection annual meeting. Ames, IA. October 8, 2013.
11. Dairy industry issues and concerns. Iowa Association for Food Protection annual meeting. Ames, IA. October 8, 2013.
12. Dairy opportunities. Tri State Dairy and Youth Expo. Calmar, IA. September 12, 2013.
13. Opportunities and applications for novel chlorine disinfectant technologies on dairies. Zurex PharmaAgra and GEA Technologies Think Tank. Naperville, IL. August, 2013.
14. Farm transitions: moderator for dairy producers and agribusiness panels. Dairy Iowa Annual Meeting. Independence, IA. June 11, 2013.
15. Mastitis and your flock. 9th Annual Sheep and Wool Festival. Adel, IA. June 8, 2013.
16. Iowa and Kosovo dairy industries: similarities and contrasts. Dairy Extension meeting. Kosovo, Kosovo. May 29, 2013.
17. Aflatoxins and the dairy industry. College of Veterinary Medicine and Agriculture. University of Pristina. Pristina, Kosovo. May 28, 2013.
18. Iowa's dairy industry. College of Veterinary Medicine and Agriculture. University of Pristina. Pristina, Kosovo. May 28, 2013.
19. Veterinary schools and veterinary career opportunities and challenges. Senior Veterinary class. University of Pristina veterinary Medicine. May 27, 2013.
20. On farm dairy practices and sustainability. MDA Dairy Retail Academy. Kansas City, MO. April 25, 2013.
21. On farm dairy practices and sustainability. MDA Dairy Retail Academy. Springfield, MO. April 24, 2013.
22. Dairy Farm Workshops and Tours for Iowa School Nurses Association (145 school nurses; in cooperation with ISU Dairy Science Club). Ames, IA. April 19, 2013.
23. Dynamic interactions of schools and farms. Annual Spring School Nurse Conference. Ames, IA. April 19, 2013.
24. Recycled beddings: bain or blessing? UMDIA /IAFP Spring meeting. Alexandria, MN. April 18, 2013.
25. Recycled beddings: bain or blessing? UMDIA /IAFP Spring meeting. Rochester, MN. April 17, 2013.
26. Dairy on farm practices and product quality and safety. ISU Dietetic Intern Webinar. April 11, 2013.
27. Iowa Dairy Survey results. Dairy Iowa meeting. Ames, IA. April 11, 2013.

28. Dips, tips, and myths on udder health. DeLaval Webinar. March 28, 2013.
29. Positioning barrier dips in lactating and dry cows. DeLaval Webinar. March 28, 2013.
30. Factors affecting sow lactation performance. Niman Ranch annual meeting. Ames, IA. March 14, 2013.
31. Evaluating your on farm udder health program. Zoetis Dairy Producer Workshop. Millerstown, PA. March 6, 2013.
32. Evaluating your on farm udder health program. Zoetis Dairy Veterinary Workshop. Grantsville, PA. March 5, 2013.
33. Evaluating your on farm udder health program. Zoetis Dairy Producer Workshop. Hershey, PA. March 5, 2013.
34. Evaluating your on farm udder health program. Zoetis Dairy Producer Workshop. Carlisle, PA. March 4, 2013.
35. Troubleshooting reproduction on dairy farms. NICC Senior Dairy Fellows Course. Calmar, IA. February 6, 2013.
36. Troubleshooting milk quality on dairy farms. NICC Senior Dairy Fellows Course. Calmar, IA. February 6, 2013.
37. Risk management of barrier teat dip and other technologies on dairies. DeLaval International webinar. December 6, 2012.
38. Managing winter milk quality risks and winter teat dipping strategies. DeLaval International webinar. December 6, 2012.
39. Milk quality assurance: milking procedures, protocols, and equipment. National Goat Expo (1st ever). Des Moines, IA. October 10, 2012.
40. Milk quality assurance: mastitis prevention and therapies. National Goat Expo (1st ever). Des Moines, IA. October 10, 2012.
41. What's your beef? The dairy industry's role in beef quality. (joint presentation with Doug Bear, IBIC). Iowa Association for Food Protection annual meeting. Ames, IA. October 9, 2012.
42. Dairy industry issues and concerns. Iowa Association for Food Protection annual meeting. Ames, IA. October 9, 2012.
43. Assessing dairy reproductive performance: the reproduction equation. 1st annual Dairy Technical Symposium. Boumatic, Inc. Madison, WI. October 4, 2012.
44. Dairy heat detection tools and rules. 1st annual Dairy Technical Symposium. Boumatic, Inc. Madison, WI. October 4, 2012.
45. Pedometry (animal activity monitoring) to enhance reproductive performance on dairy farms. 1st annual Dairy Technical Symposium. Boumatic, Inc. Madison, WI. October 4, 2012.
46. On farm dairy practices and dairy food quality and safety. MDA Retail Academy. Minneapolis, MN. September 19, 2012.
47. Sustainability and the dairy industry. MDA Retail Academy. Minneapolis, MN. September 19, 2012.
48. Iowa's "local" dairy industry: challenges and opportunities. Building partnerships in the Iowa Food System. ISUEO Food Systems Workshop. Ames, IA. September 12, 2012.

49. “Germ warfare”: understanding and coupling bacterial cultures with other milk quality tests to solve on farm problems. NMC shortcourse. NMC Regional Meeting. Sioux Falls, SD. August 15, 2012.
50. On farm dairy practices and sustainability. MDA Health and Well Being Committee workshop. Dundee, MN. July 25, 2012.
51. Dairy industry issues and opportunities. MDA Corporate Board Annual Meeting. St. Paul, MN. July 24, 2012.
52. New ideas and future profits: dairy producer panel. Dairy Iowa 1st annual meeting. Independence, IA. June 25, 2012.
53. Helping clients balancing your SCC. 4 State Dairy Nutrition and Management Conference. Dubuque, IA. June 14, 2012.
54. Dairy Farm Workshops and Tours for Goodrell Middle School (660 students; Des Moines, IA) as part of MDA Fuel Up to Play 60 curriculum. Ames, IA. May 1, 2012.
55. SCC milk quality standards: 400,000. What does it mean for our industry. UMDIA-IAFP Spring Workshop. Rochester, MN. April 18, 2012.
56. Mastitis control and milk quality wetlab. Boehringer-Ingelheim CE workshop. ISU College of Veterinary Medicine. Ames, IA. April 12, 2012.
57. ISU Dairy and the national dairy FARM program. USDA National FARM Training and Certification program. Ames, IA. April 11, 2012.
58. New Zealand geography, history, and agriculture. 7th grade Gilbert Middle School (5 classes). Gilbert, IA. March 19, 2012.
59. Getting the jump on small ruminant milk quality. Multi- state (OH, KY, IN, TN, PA, NY) webinar. February 20, 2012.
60. Assessing and addressing cow comfort on dairy farms. NICC Senior Dairy Fellows Course. Calmar, IA. February 13, 2012.
61. Troubleshooting milk quality on dairy farms. NICC Senior Dairy Fellows Course. Calmar, IA. February 13, 2012.
62. Getting a jump on goat milk quality. MN Goat Breeders annual conference. Nov. 12, 2011.
63. Milking machine basics. MN Goat Breeders annual conference. Nov. 12, 2011.
64. Milking machine troubleshooting. MN Goat Breeders annual conference. Nov. 12, 2011.
65. Using metagenomics for analyzing culture negative milk samples from clinical mastitis samples. Dairy Research Workers Conference. Chicago, IL. November 3, 2011.
66. Key to outstanding milk quality starts early. Elanco Dairy VIP Retreat. Decorah, IA. Oct. 26, 2011.
67. Current Dairy Issues, the Iowa Dairy Industry, and the ISUE dairy team. Iowa Association for Food Protection annual meeting. Ames, IA. October 11, 2011
68. Telling your dairy story. Tri-State Ag and Dairy Expo. Calmar, IA. September 8, 2011.
69. Milk safety and quality begins at the farm. MDA Supervalu Dairy Retail Academy. Eyota, MN. July 12, 2011.
70. On-farm production practices. MDA Supervalu Dairy Retail Academy. Eyota, MN. July 12, 2011.
71. Sustainability begins on the farm. MDA Supervalu Dairy Retail Academy. Twin Cities, MN. July 12, 2011.

72. Myths and Fact about Dairy Production. MN Dairy Beef Council Beef/ Dairy Workshop for Nutrition Professionals. Worthington, MN. July 11, 2011.
73. Developer and moderator: Heat Stress and Heat Abatement ISUE Dairy Team Webinar. May 26, 2011.
74. Iowa's Dairy Industry: Homegrown Solutions for Healthy Iowans Through Sustainable Dairy Systems. Iowa Food Systems Council Farms and Foods Forum; Iowa Agriculture Advancing the Health of Iowans. Des Moines, IA. April 22, 2011.
75. A dairy conversation: on farm practices. Iowa Nutrition Network Spring Mtg., April 18, 2011.
76. SCC beyond EU standards. UMDIA-IAFP Spring Workshops. Rochester, MN. April 14, 2011.
77. History of the Iowa Dairy Coalition. Dairy Outlook Mtg., Waverly, IA. April 11, 2011.
78. Balancing your SCC. UW Extension Milk Quality Seminar. Fond du Lac, WI. March 9, 2011.
79. Balancing your SCC. UW Extension Milk Quality Seminar. Casco, WI. March 8, 2011.
80. Balancing your SCC. UW Extension Milk Quality Seminar. Waldo, WI. March 8, 2011.
81. Keeping SCC below 400,000. 2011 Herd Health and Nutrition Conference. Liverpool, NY. March 2, 2011.
82. The role of nutrition in mastitis control and milk quality. Blue Seal Nutrition webinar. Feb. 23, 2011.
83. So you think you want to be a vet? Perspectives from the dairy guy. ISU Pre-Vet Club. Ames, IA. February 2011.
84. Milk quality and mastitis control in small ruminants. Dairy Webinar. Ohio Cooperative Extension. February 1, 2011.
85. Dairy case confusion: on farm practices that ensure product quality and safety. Webinar. Iowa State Dietetic Interns workshop. Ames, IA January 17, 2011.
86. Winter teat health management. DeLaval National Webinar for dairy producers and dairy equipment dealers. October 27, 2010.
87. Winter management and teat condition. DeLaval Product Specialists training. Kansas City, Mo. October 13, 2010.
88. Current Dairy Issues: SCC, FARM, and SMS. Iowa Assoc. for Food Protection annual meeting. Ames, IA. October 6, 2010.
89. A dairy conversation: what your patients and clients want to know (On farm dairy production and sustainability segment). Midwest Dairy Association webinar for registered dieticians (300+). September 21, 2010.
90. Evaluating your on farm udder health program. Blue Seal Nutrition webinar. July 28, 2010.
91. On farm dairy production and sustainability. Iowa School Nutrition dairy tours. ISU Dairy farm. Ames, IA. June 14, 2010.
92. Many faces of the Iowa and US dairy industry. Animal Science and Veterinary Medicine departments . Trakia University, Stara Zagora, Bulgaria. May 31, 2010.
93. Milk quality and mastitis control. Bulgaria, U.S., and the world. Dairy Workshop. Pleven, Bulgaria. June 2, 2010.
94. Evaluating your on farm udder health program. Dairy Workshop. Pleven, Bulgaria. June 2, 2010.
95. On farm dairy production and sustainability. Midwest Dairy Academy for Retail Excellence. Omaha, NE. May 12, 2010.
96. On farm dairy production and sustainability. Midwest Dairy Academy for Retail Excellence. Des Moines, IA. May 6, 2010.
97. Dairy sustainability (poster presentation). Iowa Farm Bureau annual meeting. Des Moines, IA. December 2, 2009.
98. On farm dairy production and sustainability. Midwest Dairy Academy for Retail Excellence. Iowa City, IA. October 21, 2009.

99. Dairy trivia and economics: do we know our industry? Iowa Association for Food protection annual meeting. Ames, IA. October 6, 2009.
100. Making sustainable food choices: can we have it all? South Dakota Dietetics Association Annual Conference. Sioux Falls, SD. September 25, 2009.
101. Analyzing milking systems and evaluation milk quality on farm (pre conference international workshop). AABP Annual Conference. Ames, IA. Sepember 8-9, 2009
102. Evaluating on farm udder health programs (simultaneous Spanish translation). University of Nebraska Dairy Education Day. Mead, NE. August 10, 2009.
103. Milking practices: new technologies or the same old routine (simultaneous Spanish translation). University of Nebraska Dairy Education Day. Mead, NE. August 10, 2009.
104. From local to probiotics: getting a grip on emerging food issues. Iowa Family and Consumer Science Conference. Des Moines, IA. July 27, 2009.
105. Dairy production systems and sustainability. Midwest Dairy Association Board Meeting. Minneapolis, MN. July 22, 2009.
106. Opening welcome speech as program chair. ADSA/ASAS/CSAS Joint Annual Meeting. Montreal, Canada. July 12, 2009.
107. Getting a grip on emerging food issues (dairy sustainability segments). Iowa School Nutrition Assoc. Annual Conference. Coralville, IA. June 23, 2009
108. Dairy production systems and sustainability. ISU Sustainability Colloquim. Ames, IA. April 22, 2009.
109. Udder health wetlab. Fort Dodge Animal Health. ISU College of Veterinary Medicine. Ames, IA. April 8, 2009.
110. Goat milk quality and mastitis programs. IDGA and IMGA meeting. Calmar, IA. Mar. 3, 2009.
111. Driven by quality: straight talk from the industry. Chair and moderator. NMC Annual Meeting, Charlotte, NC. Jan. 27, 2009.
112. Evaluating on farm milk quality programs. Iowa Association for Food Protection. Ames, IA. October 8-9, 2008.
113. Mastitis microbiology wet lab. American Association of Bovine Practitioners. Charlotte, NC. September 27, 2008.
114. Evaluating your on farm udder health program: how do you know it's working? Illinois Dairy Field Representative and Sanitarian Conference. Urbana, IL. Sept, 9, 2008.
115. Milking cows: new technologies / ideas or the same old routine? Illinois Dairy Field Representative and Sanitarian Conference. Urbana, IL. Sept, 8, 2008.
116. Iowa's comparative advantage in dairy. Farm Progress Show. Boone, IA. August 26, 2008.
117. Managing and interpreting mastitis and milk quality information on the dairy shortcourse. NMC summer meeting. Green Bay, WI. August 12, 2008.
118. Agricultural technology and career opportunities. Educational Career Fair. United Community School. Boone, IA. March 7, 2008.
119. Iowa dairy industry development: current programs and initiatives. Iowa State Dairy Association annual meeting. Waverly, IA. January 7, 2007.
120. Nutrition and mastitis: food for thought. I 29 Corridor Dairy Management Conf. Watertown, SD. Jan 31, 2007.
121. Nutrition and mastitis: food for thought. I 29 Corridor Dairy Management Conf.. Sheldon, IA. Feb 1, 2007.
122. Mastitis in ewes and its control. Sheep management WISLINE program (2 hr distant ed) . March 1, 2007.
123. Critical dairy facility components: It's a matter of inches + time = \$. 2007 Dairy Facilities Conference. Sheldon, IA. April 3, 2007.

124. Critical dairy facility components: It's a matter of inches + time = \$. 2007 Dairy Facilities Conference. Calmar, IA. April 4, 2007.
125. Eliminating Nutrition and mastitis: food for thought. Four State Dairy Nutrition and Management Conference. Dubuque, IA. June 13, 2007.
126. Iowa dairy industry development: current programs and initiatives. Coalition to Support Iowa's Farmers board meeting. June 21, 2007.
127. New ISU Dairy Farm: getting to know your new neighbor. Waterford Retirement Community, Ames, IA. August 2007.
128. Evaluating your on farm udder health program: how do you know it is working? Tri-State Ag and Dairy Expo. Calmar, IA. September 4, 2007.
129. Milk quality programs for dry / transition / fresh cows and heifers. Land O Lakes Transition Cow On-Farm Workshop. Volga, IA. Sept. 29, 2007.
130. New ISU dairy Farm update. Ames Town and Country Kiwanis. Ames, IA. October 7, 2007.
131. Many Faces of the Iowa Dairy Industry (Keynote). Iowa Assoc. for Food Protection Ann. Mtg., Ames, IA. October 10, 2007.
132. Milk quality programs for transition cows and heifers. Northwest Iowa Dairy Herd Management Meeting. Sheldon, IA. February 15, 2006.
133. Milking practices: aiming for milk quality and beyond. Northwest Iowa Dairy Herd Management Meeting. Sheldon, IA. February 15, 2006.
134. Milk quality programs for transition cows and heifers. Northwest Iowa Dairy Herd Management Meeting. Holstein, IA. February 16, 2006.
135. Milking practices: aiming for milk quality and beyond. Northwest Iowa Dairy Herd Management Meeting. Holstein, IA. February 16, 2006.
136. Reproductive challenges. AMPI Young Cooperators Annual meeting. New Ulm, MN. February 23, 2006.
137. Cozying up with cow comfort. Eastern Iowa Dairy Expo. Calmar, IA. March 10, 2006.
138. Eliminating mastitis in tie stall and free stall barns. Dairy Focus 2006. Greenwich, Nova Scotia, Canada. March 29, 2006.
139. What is quality milk? UMDIA-IAFP Spring Conference. Albert Lea, MN. April 5, 2006.
140. Update on new ISU dairy farm. IFNS meeting. Ames, IA. April 13, 2006.
141. Balancing your time budget and the cow's too. Four State Dairy Nutrition and Management Conference. Dubuque, IA. June 15, 2006.
142. Analyzing dairy records workshop / shortcourse. Four State Dairy Nutrition and Management Conference. Dubuque, IA. June 15, 2006.
143. Nutrition and mastitis: food for thought. Summer NMC Meeting. Charlottetown, PEI, Canada. August 10, 2006.
144. Nutrition and mastitis: food for thought. Zinpro Corp. Dairy Management Seminar. Albuquerque, NM. October 13, 2006.
145. Quality milk: you make the call. Iowa Assoc. for Food Protection Ann. Mtg., Ames, IA. October 18, 2006.
146. Quality milk starts at the farm. Iowa Assoc. for Food Protection Annu. Mtg., Ames, IA. October 18, 2006.
147. Milk quality programs for dry / transition / fresh cows and heifers. Wisconsin Veterinary Medical Assoc. Annu. Conf. Madison, WI. October 21, 2006.
148. Milking fresh cows more often with shorter dry periods. Wisconsin Veterinary Medical Assoc. Annual Conference. Madison, WI. October 21, 2006.
149. Caring for teats in winter. Midwest Dairy Health Conference. Stevens Point, WI. November 8, 2006.

150. Sleeping and mastitis: both need good bedding. Midwest Dairy Health Conference. Stevens Point, WI. November 8, 2006.
151. Mastitis control programs for heifers, transition cows, and dry cows. Green County Dairy Management Seminar, Monroe, WI. January 6, 2005
152. Everything you wanted to know about teat ends, but can ask! Green County Dairy Management Seminar, Monroe, WI. January 6, 2005
153. President's Report. NMC Annual Conference. Orlando, Fla. January 18, 2005.
154. What is quality milk and how do you get there? Westfalia-Surge National Sales and Technical Service Meeting. Las Vegas, NV. January 21, 2005.
155. Milk quality from a bacteria's point of view. Westfalia-Surge National Sales and Technical Service Meeting. Las Vegas, NV. January 21, 2005.
156. Mastitis control programs for heifers, transition cows, and dry cows. Westfalia-Surge National Sales and Technical Service Meeting. Las Vegas, NV. January 21, 2005.
157. Proper milking practice and equipment: key combination for udder health and farm profitability. Westfalia-Surge National Sales and Technical Service Meeting. Las Vegas, NV. January 21, 2005.
158. Improving reproductive performance. Minnesota / Iowa Dairy Day. Adams, MN. February 8, 2005.
159. A romantic approach to higher milk quantity and quality in less time. Swiss Valley Young Cooperators Annual Meeting. Prairie du Chien, WI. February 12, 2005.
160. Multiple milking update for fresh cows and heifers. Dairy Peer Group. Caledonia, MN. Feb. 2, 2005.
161. Winter teat dipping update. Caledonia Dairy Peer Group. Caledonia, MN. Feb. 2, 2005.
162. Mastitis control programs for heifers and dry cows. Dairy Peer Group. Caledonia, MN. Feb. 2, 2005.
163. Milk quality and production. NEIDF Showcase Day. Calmar, IA. March, 10, 2005.
164. What is quality milk and how do you get there? Fort Dodge Animal Health National Sales and Technical Service Meeting. Overland Park, KS. April 18, 2005.
165. Milk quality from a bacteria's point of view. Fort Dodge Animal Health National Sales and Technical Service Meeting. Overland Park, KS. April 18, 2005.
166. Mastitis control programs for heifers, transition cows, and dry cows. Fort Dodge Animal Health National Sales and Technical Service Meeting. Overland Park, KS. April 18, 2005.
167. Proper milking practice and equipment: key combination for udder health and farm profitability. Fort Dodge Animal Health National Sales and Technical Service Meeting. Overland Park, KS. April 18, 2005.
168. Mycoplasma mastitis and droopy-eared calves: what's in common? Four State Dairy Nutrition and Management Conference. Dubuque, IA. June 15, 2005.
169. Teat problems caused by winter – what have we learned. Summer NMC Meeting. Burlington, VT. July 13, 2005.
170. Management strategies to reduce somatic cell counts. Illinois Dairy Field Representative and Sanitarian Conference. Urbana, IL. September 12, 2005.
171. Controlling heifer mastitis. Illinois Dairy Field Representative and Sanitarian Conference. Urbana, IL. Sept, 13, 2005
172. Milk quality and health updates: from Orbaseal to Spectramast. Iowa Association for Food Protection. Ames, IA. October 26, 2005.
173. Update and questions on winter dip trials. Mastitis Research Workers Conference. Chicago, Il. Nov 2, 2005.
174. Prepartum treatment of dairy heifers with pirlimycin HCL to reduce prevalence of early first lactation mastitis. Mastitis Research Workers Conference. Chicago, Il. Nov 2, 2005.

175. Use of the California mastitis test and on farm culture system for strategic identification and treatment of fresh cow subclinical intramammary infections and clinical mastitis during lactation. Mastitis Research Workers Conference. Chicago, IL. Nov 3, 2005.
176. Understanding and using the DHI herd summary. Dairy Lab Services Fall Technician Conference. Dubuque, IA. Nov. 4, 2005.
177. Capturing Energy Efficiencies and Their By-Products on Dairy Farms. ACEEE National Forum on Energy Efficiency in Agricultural . Des Moines, IA. Nov. 15, 2005.
178. Tools and resources to improve milk quality. Pfizer Dairy Health Workshop. Calmar, IA. Dec. 13, 2005.
179. Cow culling strategies. ISU BSE Satellite Update. Ames, IA. January 7, 2004.
180. Milk quality tests: why, when, what and \$. NE Missouri Dairy Management Conf. Memphis, MO. January 12, 2004.
181. Getting a jump on heifer and dry cow mastitis. NE Missouri Dairy Management Conf. Memphis, MO. Jan. 12, 2004.
182. High five management areas. Eastern Iowa Dairy Conference. Dubuque, IA. January 13, 2004.
183. What is quality milk and how do you get there? 26th Minnesota Goat Breeders Conf. St Paul, MN. Jan. 17, 2004.
184. Welcome and program introduction. NMC 43rd Annual Mtg. Charlotte, NC. February 3, 2004.
185. Winter conditions and teat health: why and what to do. NMC 43rd Annual Mtg. Charlotte, NC. February 3, 2004.
186. Getting a jump on heifer mastitis. 4 State Dairy Management Seminar. Norwood, MN. February 16, 2004.
187. Dry period length: how short is long enough. 4 State Dairy Management Seminar. Norwood, MN. Feb.16, 2004.
188. Getting a jump on heifer mastitis. 4 State Dairy Management Seminar. Sheldon, IA. February 17, 2004
189. Dry period length: how short is long enough. 4 State Dairy Management Seminar. Sheldon, IA. Feb.17, 2004.
190. Getting a jump on heifer mastitis. 4 State Dairy Management Seminar. Breese, IL. February 18, 2004
191. Dry period length: how short is long enough. 4 State Dairy Management Seminar. Breese, IL. Feb.18, 2004.
192. Getting a jump on heifer mastitis. 4 State Dairy Management Seminar. Arlington, WI. February 19, 2004
193. Dry period length: how short is long enough. 4 State Dairy Management Seminar. Arlington, WI. Feb.19, 2004.
194. Successful methods for controlling your somatic cell count. NEIDF Dairy Series, Calmar, IA. Mar. 3, 2004.
195. Getting a jump on heifer mastitis. Western Canadian Dairy Symposium. Red Deer, Alberta, Canada. March 11, 2004.
196. Milk quality programs for transition cows. Western Canadian Dairy Symposium. Red Deer, Alberta, Canada. March 11, 2004.
197. Mastitis diagnostics, prevention, and therapy technologies and strategies for transition cows and heifers. Midwest ADSA . Des Moines, IA. March 17, 2004.
198. Got milk! Got money! Iowa Veterinary Medical Assoc., Dubuque, IA. May 7, 2004.
199. Update on teat sealants. Four State Professional Dairy Management Conference. Dubuque, IA. June 16, 2004.
200. Goat milk quality standards and mastitis fundamentals. American Veterinary Medical Assoc. (AVMA) Annual Conference. Philadelphia, PA. July 24, 2004.

201. Understanding and using goat somatic cell counts. AVMA Annu. Conf.. Philadelphia, PA. July 24, 2004.
202. Caprine milking management. AVMA Annu. Conf.. Philadelphia, PA. July 24, 2004.
203. Caprine mastitis prevention and teat end health. AVMA Annu. Conf.. Philadelphia, PA. July 24, 2004.
204. Milking machine basics: parts and functions. AVMA Annu. Conf.. Philadelphia, PA. July 25, 2004.
205. Milking machine troubleshooting: your role in making it work. AVMA Annu. Conf.. Philadelphia, PA. July 25, 2004.
206. Dry cow period length. Top Dairy Conference '04. Des Moines, IA. August 14, 2004.
207. Shortened dry periods. Midwest Veterinary Symposium. Sheboygan, WI August 19, 2004.
208. Frequent fresh cow milking. Midwest Veterinary Symposium. Sheboygan, WI August 19, 2004.
209. An overview of dairy research and extension programs at ISU. Iowa Dairy Summit. Clear Lake, IA. August 24, 2004.
210. Animal health issues. National Conference on Hoop Barns and Bedded Systems for Livestock Production. Ames, IA. September 14, 2004.
211. The many faces of the Iowa dairy industry. Dairy Development Session. Ida Grove, IA. November 8, 2004.
212. Best management practices dairy roundtable (moderator and presenter). Western Iowa Dairy Expo. Sioux City, IA. Jan. 16, 2003
213. Common sense issues regarding use of teat dip sealants for dry cows. West Agro Dry Flex Symposium. Fort Worth, TX. Jan 29, 2003.
214. Milking for fun and profit: a hands On approach to proper milking procedures. (3 presentations). MW –ADSA Student Affiliate Midwest Conference. Ames, IA. Feb. 15, 2003.
215. Frequent milking on early lactation animals: Pros / Cons. SE MN Dairy Roundtable. Caledonia, MN. Feb. 24, 2003.
216. To dip or not to dip? The winter saga. SE MN Dairy Roundtable. Caledonia, MN. Feb. 24, 2003.
217. Frequent milking on early lactation animals: Pros and Cons. NE IA Dairy Foundation Showcase Day. Calmar, IA. Mar. 12, 2003.
218. Cow comfort: What do you do in the cow barn? NE Missouri Dairy Management Conference. Memphis, MO. March 20, 2003.
219. Mastitis prevention, therapy, and milk quality. NE Missouri Dairy Management Conference. Memphis, MO. March 20, 2003.
220. DHI-SCC: Looking beyond the average. Dairy Lab Services Annual Meeting. Dubuque, IA. Mar. 21, 2003.
221. Milk quality issues in heifers and transition cows – Beyond just a low herd cell count. Central Plains Dairy Expo. Sioux Falls, SD. March 26, 2003.
222. Heat detection tools and rules. (2 presentations)MW Extension Bovine Reproduction Consortium Dairy Symposium. Merrimac, WI. May 1, 2003.
223. What's new to help improve milk quality? – Strategies to use from pre dryoff through early lactation. Pfizer Udder Health Workshop. Boyden, IA. July 1, 2003.
224. What's new to help improve milk quality? – Strategies to use from pre dryoff through early lactation. Pfizer Udder Health Workshop. Calmar, IA. July 2, 2003.
225. Milk quality issues in heifers and transition cows – Beyond just a low herd cell count. 2nd Annual University of Arizona Dairy Conference. Tempe, AZ. October 16, 2003.
226. Winter Dip Strategies and Issues. West Agro Dairy Think Tank. Kansas City, MO. October 21, 2003.
227. New insights into dip sealants for dry cows. West Agro Dairy Think Tank. Kansas City, MO. October 21, 2003.

228. Milk quality issues in heifers and transition cows. IA Assoc. for Food Protection Annu. Mtg. Ames, IA. Oct. 29, 2003.
229. Mycoplasma: mastitis and more. IA Assoc. for Food Protection Annu. Mtg. Ames, IA. October 30, 2003.
230. Mycoplasma: mastitis and more. Vita Plus Dairy Summit. Milwaukee, WI. December 11, 2003.
231. Mastitis control, prevention, and treatment in sheep. Statewide Sheep ICN Program. Ames, IA. Jan. 8, 2002.
232. Winter teat lesions and changes: causes, corrections, and cures. Minnesota Veterinary Med. Assoc. Annual Mtg. Minneapolis, MN. Feb. 1, 2002.
233. Environmentally related teat condition problems. National Mastitis Council Annual Meeting Shortcourse on Evaluating Teat Condition. Orlando, FL., Feb.4, 2002.
234. Maintaining healthy teats: problems and solutions. Four State Dairy Management Seminar. Breese, IL. Feb. 19, 2002.
235. Hemorrhagic bowel syndrome: new disease or old nemesis? Four State Dairy Management Seminar. Breese, IL. Feb.19, 2002.
236. Maintaining healthy teats: problems and solutions. Four State Dairy Management Seminar. Sioux Center, IA. Feb. 20, 2002.
237. Hemorrhagic bowel syndrome: new disease or old nemesis? Four State Dairy Management Seminar. Sioux Center, IA. Feb. 20, 2002.
238. Maintaining healthy teats: problems and solutions. Four State Dairy Management Seminar. Winona, MN., Feb. 21, 2002.
239. Hemorrhagic bowel syndrome: new disease or old nemesis? Four State Dairy Management Seminar. Winona, MN. Feb. 21, 2002.
240. Maintaining healthy teats: problems and solutions. Four State Dairy Management Seminar. Arlington, WI., Feb. 22, 2002
241. Hemorrhagic bowel syndrome: new disease or old nemesis? Four State Dairy Management Seminar. Arlington, WI.,Feb. 22, 2002
242. Working together to help the Iowa dairy industry stay in business and grow. IA State Dairy Assoc. Annual Mtg. Calmar, IA., April 5, 2002.
243. Efficacy of barrier teat dips in preventing dry period mastitis. DeLaval Hygiene Technology Center Inaugural International Symposium. Kansas City, MO., May 15, 2002.
244. Healthy teat effects on milk quality. Illinois Dairy Field Representative and Sanitarians Conference. Urbana, IL., Sept. 9, 2002.
245. What's new in mastitis control? Illinois Dairy Field Representative and Sanitarians Conference. Urbana, IL., Sept. 10, 2002.
246. What's new in mastitis control? Tri County Vet Association monthly meeting. Dyersville, IA., Sept. 11, 2002.
247. Photoperiod lighting. Western Iowa Dairy Expo. Sioux City, IA. Jan. 17, 2001.
248. Heat detection: tools and rules. Beef breeding management seminar ICN. Ames, IA. Jan. 20, 2001.
249. Evaluating dairy health and comfort. National Student American Veterinarian Medical Assoc. Symposium. Atlantic, IA. March 9, 2001.
250. Dips, tips, and myths on udder health (2 talks). Hubbard Nutrition Dairy Forum. Sidney, OH. March 13, 2001.
251. Dips, tips, and myths on udder health (2 talks). Hubbard Nutrition Dairy Forum. Cadillac, MI. Mar. 14, 2001.
252. 135. US dairy team quality milk initiative. Pharmacia Animal Health, Kalamazoo, MI. May 30/ June 1, 2001.
253. National public speaking contest official. National Holstein Convention. Cedar Rapids, IA. June

- 27, 2001.
254. Dairy jeopardy official. National Holstein Convention. Cedar Rapids, IA. June 29, 2001.
 255. Hemorrhagic bowel syndrome. Four State Applied Nutrition / Management Conf., Lacrosse, WI. July 12, 2001.
 256. You want to be a milking millionaire. Tri State Ag and Dairy Expo. Decorah, IA. Sept. 6. 2001.
 257. Development of a nested PCR method for detection of *Mycoplasma bovis* in preserved milk samples. NMC/AABP 2nd International Symposium on Mastitis and Milk Quality. Vancouver, BC, Canada Sept. 13, 2001.
 258. Prevention and pirlimycin therapy strategies for a high somatic cell count herd: case study. NMC/AABP 2nd International Symposium on Mastitis and Milk Quality. Vancouver, BC, Canada Sept. 14, 2001.
 259. Jejunal hemorrhage syndrome. NE Wisconsin Vet. Med. Assoc. Annual Mtg., Appleton, WI. Sept. 29, 2001.
 260. Dairy cow reproductive management: case studies. 1st Annual Bovine Reproduction Task force Workshop on Synchronization Strategies in Cattle. Kalamazoo, MI. Oct. 18, 2001.
 261. Working together to help the Iowa dairy industry stay in business and grow. IA Dairy Products Assoc. Annual Mtg. Ames, IA. Nov. 15, 2001.
 262. Mastitis control, prevention, and treatment in sheep. Sheep Extension ICN, Ames, IA. Jan. 11, 2000.
 263. Stronghold teat sealant research. Alfa-Laval Teat Protection and Hygiene Symposium. Kansas City, MO Jan. 25, 2000.
 264. Teat end changes during winter conditions. Alfa-Laval Teat Protection and Hygiene Symposium. Kansas City, MO Jan. 25, 2000.
 265. Environmental mastitis update. Iowa Vet. Med. Assoc. Dairy Symposium. Dubuque, IA. May 5, 2000.
 266. Reproduction wet lab (3 sessions). Gilbert Elementary School 5th grade science. Gilbert, IA. May, 25, 2000.
 267. Field trial evaluations of a persistent barrier teat dip for preventing dry period mastitis and as an adjunct/ alternative to dry cow therapy. (2 presentations) Dry Flex and Dry Cow management Training. Drongen, Belgium. June 9, 2000.
 268. Characterization of teat end changes or lesions (winter especially) and novel approaches for prevention and therapy. Symposium on Immunology of Ruminant Mammary Gland. Stressa, Italy. June 12, 2000.
 269. Field trial evaluations of a persistent barrier teat dip for preventing dry period mastitis and as an adjunct/ alternative to dry cow therapy. (2 presentations) Dry Flex and Dry Cow management Training. Stressa, Italy. June 14, 2000.
 270. Dry cow sealant research update. West Agro, Inc. Kansas City, MO. August 7, 2000.
 271. Dairy reproduction tools. Tri State Ag and Dairy Expo. Decorah, IA. Sept. 7, 2000.
 272. Milk quality standards and mastitis fundamentals. American Assoc. of Small Ruminant Practitioners (AASRP CE meeting) : American Dairy Goat Assoc. National Convention. Cedar Rapids, IA. Oct. 17, 2000.
 273. Understanding and using somatic cell counts. American Assoc. of Small Ruminant Practitioners (AASRP CE meeting) : American Dairy Goat Assoc. National Convention. Cedar Rapids, IA. Oct. 17, 2000.
 274. Milking management for goats and small ruminants. American Assoc. of Small Ruminant Practitioners (AASRP CE meeting) : American Dairy Goat Assoc. National Convention. Cedar Rapids, IA. Oct. 17, 2000.
 275. Mastitis prevention and teat end health. American Assoc. of Small Ruminant Practitioners (AASRP CE meeting) : American Dairy Goat Assoc. National Convention. Cedar Rapids, IA.

- Oct. 17, 2000.
276. Field evaluation of extended pirlimycin therapy with or without vaccination for *Staphylococcus aureus*. Pacific Congress on Mastitis and Milk Quality. Nagano, Japan. Nov. 15, 2000.
 277. Detecting *Mycoplasma bovis* in miolk samples by nested PCR. Pacific Congress on Mastitis and Milk Quality. Nagano, Japan. Nov. 15, 2000.
 278. Characterization of teat end changes and approaches for prevention and therapy. Pacific Congress on Mastitis and Milk Quality. Nagano, Japan. Nov. 16, 2000.
 279. Dips, tips, and myths on udder health. (2 talks). 4 State Dairy Management Conference. Breese, IL. Feb. 23, 1999.
 280. Dips, tips, and myths on udder health. (2 talks). 4 State Dairy Management Conference. Rock Valley, IA Feb.24, 1999.
 281. Dips, tips, and myths on udder health. (2 talks) . 4 State Dairy Management Conference. Rochester, MN Feb. 25, 1999
 282. Dips, tips, and myths on udder health. (2 talks) . 4 State Dairy Management Conference. Appleton, WI Feb. 26, 1999
 283. Dips, tips, and myths on udder health. (2 talks) . New England Dairy Conference Series. Vernon, CT March 8, 1999
 284. Dips, tips, and myths on udder health. (2 talks) . New England Dairy Conference Series. Sheldon, VT March 9, 1999
 285. Dips, tips, and myths on udder health. (2 talks) . New England Dairy Conference Series. Lancaster, NH March 10, 1999
 286. Dips, tips, and myths on udder health. (2 talks) . New England Dairy Conference Series. West Lebanon, NH March 11, 1999
 287. Dips, tips, and myths on udder health. (2 talks) . New England Dairy Conference Series. Waterville, ME March 12, 1999
 288. . Dips, tips, and myths on udder health. IVMA Seminar. Dubuque,IA 4/30/99
 289. Dips, tips, and myths on udder health. (2 talks) . Canadian Veterinary Medical Association Annual Convention. Calgary, Alberta, Canada. July 29, 1999.
 290. Can somatic cell counts get too low? Canadian Veterinary Medical Association Annual Convention. Calgary, Alberta, Canada. July 29, 1999.
 291. Teat end health—is your herd at risk? 1999 Milking Systems Seminar, Kaukauna, WI Nov. 4, 1999.
 292. Winter udder health issues. Dairy Nutrition and Management Conference, Sheldon, IA Dec. 15, 1999.
 293. Heat detection tools. Dairy Nutrition and Management Conference, Sheldon, IA December 15, 1999.
 294. Teat end research results. NMC Milking Machine Committee. St. Louis, MO. Jan. 26, 1998.
 295. A year in the life of a teat end. National Mastitis Council Annual Meeting, St. Louis, MO. Jan. 27, 1998.
 296. Heat detection strategies: new strategies to consider Reproduction Symposium, Iowa Beef Center. Ames, IA Feb.21, 1998.
 297. Dips, tips, and myths on udder health. Dodgeville Vet Clinic Ann. Mtg., Dodgeville, WI. March 12, 1998
 298. Handling mastitis problem herds. Panamerican Congress on Mastitis Control and Milk Quality. (3 hr. shortcourse) Merida, Yucatan, MX March 26, 1998.
 299. Field trial evaluation of a persistent barrier teat dip for preventing mastitis during the dry period. Panamerican Congress on Mastitis Control and Milk Quality, Merida, Yucatan, MX Mar. 27,1998.
 300. Evaluating milk production and health using DHIA records. Farmland Dairy Workshop. Roswell,

- NM. April 3, 1998.
301. Nutrition and immunity: Mastitis as a model. Technical Training Session, Farmland, Inc., Roswell, NM. April 4, 1998.
 302. Understanding mastitis and somatic cell counts. Technical Training Session, Farmland, Inc. Roswell, NM. April 4, 1998.
 303. Developing stalls for cow comfort. Technical Training Session, Moorman's, Inc. Quincy, IL April 14, 1998.
 304. Milk quality and mastitis control. (4hrs). Dordt College, Sioux Center, IA, April 20, 1998.
 305. Dairy Workshops via ICN. ISU ECE Conference, Ames, IA April 14, 1998
 306. Comparative digestive wet lab. Gilbert Elementary School, Gilbert, IA. May 15, 1998.
 307. Reproductive anatomy wet lab. Gilbert Elementary School. Gilbert, IA. May 25, 1998.
 308. National Ayrshire Princess Contest, Cedar Rapids, IA June 26, 1998
 309. Controlling dry period mastitis and winter teat lesions. Featured barn meeting program. North Troy, VT. Sept. 14, 1998
 310. Teat end health. Vermont Dairy Industry Assoc. Ann. Mtg., Burlington, VT. Sept. 15, 1998.
 311. Controlling winter teat lesions. S. VT Dairy Meeting. September 16, 1998.
 312. Dairy bedding alternatives. Postsecondary Agricultural Students of Iowa Fall Industry Conference. Ames, IA. September 19, 1998.
 313. Can somatic cell counts get too low? IBA Eastern Regional Mtg. Syracuse, NY Oct.8, 1998
 314. Controlling winter teat end lesions. IBA Eastern Regional Mtg. Syracuse, NY Oct.8, 1998
 315. Understanding goat somatic cell counts. IA Dairy Goat Symposium. Ames, IA. Oct. 31, 1998.
 316. Development of a barrier teat dip for dry period mastitis. West Agro Annual Sales Meeting, Orlando, FL. Jan. 21, 1997.
 317. Measuring milk components in the future. Afimilk - Germania Automation Advisory Mtg., Albuquerque, NM. Feb. 15, 1997.
 318. Measuring and interpreting somatic cell counts. Afimilk-Germania Automation Advisory Mtg., Albuquerque, NM. Feb. 16, 1997.
 319. Troubleshooting reproduction problems on dairy farms. Midwest ASAS/ADSA Mtg., Des Moines, IA. March 19, 1997.
 320. Can somatic cell counts get too low? Western Canadian Dairy Symposium. Red Deer, Alberta, Canada. March 26, 1997.
 321. Harvesting more milk by fine tuning milking equipment. Western Canadian Dairy Symposium. Red Deer, Alberta, Canada. March 26, 1997.
 322. Making cents of reproductive management tools. Iowa Junior Dairy Coalition. Cedar Rapids, IA. April 5, 1997.
 323. Understanding mastitis and somatic cell counts. Technical Training Session, Moorman's Inc., Quincy, IL. April 24, 1997.
 324. Developing stalls for cow comfort. Technical Training Session, Moorman's, Inc. Quincy, IL April 24, 1997.
 325. Comparative digestive wet lab. Gilbert Elementary School, Gilbert, IA. May 15, 1997.
 326. Comparative reproductive anatomy wet lab. Gilbert Elementary School. Gilbert, IA June 3, 1997.
 327. Persistent barrier teats dips for ewes post weaning and pre-lambing. Increasing Pre and Post Natal Survival in Lambs Symposium - NC 111. Ames, IA. June 27, 1997.
 328. Controlling dry period mastitis and winter teat lesions. Four State Applied Nutrition and Management Conference. Lacrosse, WI. August 6, 1997.
 329. Effectiveness of barrier teat dips in preventing dry period mastitis. National Mastitis Council Regional Meeting. Syracuse, NY. August 20, 1997.
 330. Mastitis, nutrition, and the immune response. Standard Manufacturing Dairy Consultant

- Training. Omaha, NE. September 18, 1997.
331. Understanding somatic cells/mastitis control and management. Standard Manufacturing Dairy Consultant Training. Omaha, NE. September 18, 1997.
 332. Evaluating and interpreting milk production and composition records. Standard Manufacturing Dairy Consultant Training. Omaha, NE. September 18, 1997.
 333. Positioning barrier teat dips for dairy cows: lactating and dry. IVMA Dairy Practitioners Seminar. Dubuque, IA. October 10, 1997.
 334. Can somatic cell counts get too low? IBA Midwest Regional Mtg. St. Paul, MN. October 23, 1997.
 335. Controlling winter teat end lesions. IBA Midwest Regional Mtg. St. Paul, MN. October 23, 1997.
 336. Understanding goat somatic cell counts. IA Dairy Goat Symposium. Ames, IA. November 1, 1997.
 337. Can somatic cell counts get too low? IBA Western Regional Mtg. Albuquerque, NM. Nov. 15, 1997.
 338. Controlling winter teat end lesions. IBA Western Regional Mtg. Albuquerque, NM. Nov. 15, 1997.
 339. Dips, tips, and myths on udder health. Vita Plus Dairy Summit. Stevens Point, WI. Dec. 12, 1997.
 340. Milking barns, parlors, and systems. Dairy Farms In Transition Workshop. Calmar, IA. Feb 26, 1996
 341. My SCC is 250,000. Now what? Upjohn Dairy Producer Summit. Platteville, WI. Feb. 28, 1996
 342. Mastitis prevention and treatment for the 90's and beyond. Upjohn Dairy Producer Summit. Platteville, WI. Feb. 28, 1996
 343. Milking management and udder health. Westfalia Systemat Training School. Elk Grove Village, IL. March 11, 1996.
 344. Comparative reproductive anatomy wet lab. Gilbert Elementary School. Gilbert, IA June 5, 1996.
 345. Mastitis as a disease model for immunity – how it works! Ralco Annual Sales Conference. Sioux Falls, SD. August 9, 1996.
 346. Using total quality management to make rationale treatment decisions. Midwest Dairy management Conference. Minneapolis, MN. August 28, 1996.
 347. Milking practices: new ideas or the same old routine. Wisconsin Milk Quality Forum. Dodgeville, WI. Jan. 4, 1995.
 348. Milking practices: new ideas or the same old routine. Wisconsin Milk Quality Forum. Monroe, WI. Jan. 5, 1995.
 349. Mastitis Control and Milking practices (2 talks). Illinois Dairy Days. St. Libory, IL. Jan. 11, 1995.
 350. Mastitis Control and Milking practices (2 talks). Illinois Dairy Days. Breese, IL. Jan. 11, 1995
 351. Mastitis Control and Milking practices (2 talks). Illinois Dairy Days. Effingham, IL. Jan. 11, 1995
 352. Mastitis control and milk quality in sheep. Iowa Sheep Symposium. Des Moines, IA. March 5, 1995.
 353. Nutrition and immunity: mastitis as a model. Walnut Grove Technical Training Conference. Clive, IA. May 9, 1995.
 354. Comparative digestive wet lab. Gilbert Elementary School, Gilbert, IA. May 18, 1995.
 355. Comparative reproductive anatomy wet lab. Gilbert Elementary School. Gilbert, IA. June 5, 1995.
 356. Milking machines: can we harvest more milk? Purina Mills Dairy Consultant Meeting. Ithaca,

NY. June 28, 1995

357. What is quality milk? AVMA Annual Conference. Pittsburgh, PA July 10, 1995.
358. Can somatic cell counts get too low? Wisconsin Association of Milk and Food Sanitarians. Appleton, WI. September 29, 1995.
359. Dairy Industry of China. Iowa Association of Milk, Food, and Environmental Sanitarians. Waterloo, IA. October 12, 1995.
360. Mastitis therapies. Four State Dairy Day. St. Joseph, MO. January 6, 1994.
361. Reproductive management of the dairy herd. Land O'Lakes Circle of Quality Seminar. Sioux Falls, South Dakota January 11, 1994
362. Reproductive management of the dairy herd. Land O'Lakes Circle of Quality Seminar. Watertown, South Dakota January 12, 1994
363. Can your somatic cell count be too low? Illinois Dairy Days. Dixon, IL. Jan. 18, 1994.
364. Breeding decisions for high producing cows. Illinois Dairy Days. Dixon, IL. Jan. 18, 1994.
365. Can your somatic cell count be too low? Illinois Dairy Days. Freeport, IL. Jan. 18, 1994.
366. Breeding decisions for high producing cows. Illinois Dairy Days. Freeport, IL. Jan. 18, 1994.
367. Can your somatic cell count be too low? Illinois Dairy Days. Elizabeth, IL. Jan. 18, 1994.
368. Breeding decisions for high producing cows. Illinois Dairy Days. Elizabeth, IL. Jan. 18, 1994.
369. Can your somatic cell count be too low? Illinois Dairy Days. Marengo, IL. Jan. 18, 1994.
370. Breeding decisions for high producing cows. Illinois Dairy Days. Marengo, IL. Jan. 18, 1994.
371. Can your somatic cell count be too low? North Dakota Dairy Cow College. Wyndmere, ND. February 21, 1994.
372. Breeding decisions for high producing cows. North Dakota Dairy Cow College. Wyndmere, ND. February 21, 1994.
373. Can your somatic cell count be too low? North Dakota Dairy Cow College. Linton, ND. February 22, 1994.
374. Breeding decisions for high producing cows. North Dakota Dairy Cow College. Linton, ND. February 22, 1994.
375. Can your somatic cell count be too low? North Dakota Dairy Cow College. New Salem, ND. February 23, 1994.
376. Breeding decisions for high producing cows. North Dakota Dairy Cow College. New Salem, ND. February 23, 1994.
377. Can your somatic cell count be too low? North Dakota Dairy Cow College. Dickinson, ND. February 24, 1994.
378. Breeding decisions for high producing cows. North Dakota Dairy Cow College. Dickinson, ND. February 24, 1994.
379. Can your somatic cell count be too low? North Dakota Dairy Cow College. Velva, ND. February 25, 1994.
380. Breeding decisions for high producing cows. North Dakota Dairy Cow College. Velva, ND. February 25, 1994.
381. Can your somatic cell count be too low? 4 State Dairy Management Conference. Breese, IL. February 8, 1994.
382. Efficiency and economics of antibiotic and alternative mastitis strategies. 4 State Dairy Management Conference. Breese, IL. February 8, 1994.
383. Can your somatic cell count be too low? 4 State Dairy Management Conference. Calmar, IA. February 9, 1994.
384. Efficiency and economics of antibiotic and alternative mastitis strategies. 4 State Dairy Management Conference. Calmar, IA. February 9, 1994.
385. Can your somatic cell count be too low? 4 State Dairy Management Conference. Arlington, WI. February 10, 1994.

386. Efficiency and economics of antibiotic and alternative mastitis strategies. 4 State Dairy Management Conference. Arlington, WI. February 10, 1994.
387. Can your somatic cell count be too low? 4 State Dairy Management Conference. St. Joseph, MN. February 11, 1994.
388. Efficiency and economics of antibiotic and alternative mastitis strategies. 4 State Dairy Management Conference. St. Joseph, MN. February 11, 1994.
389. GIT wet lab, Gilbert Elementary School, Gilbert, IA. May 10, 1994.
390. Activity monitor experiment, Gilbert E.S., Gilbert, IA. May 13-20, 1994.
391. Reproduction wet lab, Gilbert E.S., Gilbert, IA. June 2, 1994.
392. Efficiency and economics of antibiotic and alternative mastitis therapies. 4 State Professional Dairy Management Seminar. Dubuque, IA. June 23, 1994.
393. Understanding your harvesting equipment. Mid-States DHIA Field Technician Conference. Ames, IA. July 20, 1994.
394. Cow comfort is people comfort. Mid-States DHIA Field Technician Conference. Ames, IA. July 20, 1994.
395. Posilac and udder health: know the facts! Monsanto Dairy Management Seminar. Sioux Center, IA. July 25, 1994.
396. Can cell counts be too low? Illinois Fieldmens' Conference. Champaign, IL September 12, 1994.
397. Troubleshooting a problem herd. Illinois Fieldmens' Conference. Champaign, IL September 13, 1994.
398. Making the most with machine function. 4 State Dairy Seminar, St. Joseph, MO. January 4, 1993.
399. Understanding and using somatic cell counts. National Mastitis Council SCC Shortcourse, Kansas City, MO February 15, 1993.
400. SCC = \$ and cents. Nu-Ag Bosko Dairy Seminar. Oskaloosa, IA. February 19, 1993.
401. DHIA: what do the numbers mean? Harvest States Cooperatives Dairy Training Seminar. Sioux Falls, SD. March 1, 1993.
402. Milk quality and mastitis control. Harvest States Cooperatives Dairy Training Seminar. Sioux Falls, SD. March 2, 1993.
403. Milk quality and SCC! Oklahoma Dairy Profitability Workshop. Pryor, OK. Mar. 16, 1993.
404. Milk quality and SCC. Oklahoma Dairy Profitability Workshop. El Reno, OK. Mar. 16, 1993.
405. Milk quality and SCC. Oklahoma Dairy Profitability Workshop. Clinton, OK. Mar. 16, 1993.
406. Two minute tidbits on dairy management. 56th annual Oklahoma Dairy Day. Stillwater, OK. March 20, 1993.
407. Quality estrus detection in dairy herd management. Boumatic National Reproduction Workshops. Burlington, VT. March 22, 1993.
408. Quality estrus detection in dairy herd management. Boumatic National Reproduction Workshops. Appleton, WI. March 23, 1993.
409. Quality estrus detection in dairy herd management. Boumatic National Reproduction Workshops. Mt. Vernon, WA. March 25, 1993.
410. GIT wet lab, Gilbert Elementary School, Gilbert, IA. April 13, 1993.
411. Brown arming and the 10 point dairy quality assurance plan. ISU student AABP Chapter. Ames, IA. April 15, 1993.
412. Understanding and using somatic cell counts. Zinpro Dairy Nutrition and Management Conference, Monterey, CA. April 30, 1993.
413. Reproduction wet lab. Gilbert, IA. 5th grade May 27, 1993.
414. Nutrition and mastitis. Midwest Dairy Nutrition Seminar. Lake Geneva, WI. June 4, 1993.
415. Milking management and SCC. Furst-McNess Dairy Training Workshop. Ames, IA. June 18, 1994.
416. Dairying in China vs the US. (6 dairy seminars in different cities). Hebei Province, People's Republic of China. July 27 – Aug 7, 1993.

417. Beef cow mastitis. American Association of Bovine Practitioners annual meeting. Albuquerque, NM. September 17, 1993.
418. Quality assurance programs: lessons we've learned. IVMA Dairy Veterinary Seminar. Dubuque, IA. September 24, 1993.
419. Balancing your somatic cell counts. Southern Illinois Dairy Seminar. Breese, IL. Oct. 5, 1993.
420. Balancing your somatic cell counts. Southern Illinois Dairy Seminar. Effingham, IL. Oct. 5, 1993.
421. Milk quality and YC's go hand in hand. National Milk Producers Federation Annual Young Cooperators Meeting, New Orleans, LA. November 28, 1993.
422. Understanding and using somatic cell counts. Nelson Dairy Consultant Dairy Management Workshops. Rochester, MN. January 22, 1992.
423. Understanding and using somatic cell counts. Nelson Dairy Consultant Dairy Management Workshops. Calmar, IA. January 23, 1992.
424. Understanding and using somatic cell counts. Nelson Dairy Consultant Dairy Management Workshops. Sheldon, IA. January 24, 1992.
425. Reproductive management for high producing dairy cows. Land O Lakes Circle of Quality Dairy Seminar. Green Bay, WI. January 27, 1992.
426. Reproductive management for high producing dairy cows. Land O Lakes Circle of Quality Dairy Seminar. Kiel, WI. January 28, 1992.
427. Reproductive management for high producing dairy cows. Land O Lakes Circle of Quality Dairy Seminar. New London, WI. January 29, 1992.
428. Reproductive management for high producing dairy cows. Land O Lakes Circle of Quality Dairy Seminar. Madison, WI. January 30, 1992.
429. Understanding and using somatic cell counts. National Mastitis Council SCC Shortcourse. Arlington, VA. February 10, 1992.
430. Understanding and using somatic cell counts. Nelson Dairy Consultant Dairy Management Workshops. Belmont, WI. March, 1992.
431. Milk quality and mastitis management (4 – 2 hrs. workshops). Babson Brothers Extra Care Dairy Dealer Workshops. Napierville, IL. April 7-8, 1992.
432. Can SCC get too low? 4 State Professional Dairy Management Conference. Dubuque, IA. July 8, 1992.
433. Reproductive management of high producing dairy cows. 4 State Professional Dairy Management Conference. Dubuque, IA. July 8, 1992.
434. Misconceptions about quality assurance programs. 4 State Professional Dairy Management Conference. Dubuque, IA. July 9, 1992.
435. Increases in bulk tank somatic cell counts: when to act and what to do. National Mastitis Council Summer Meeting, St. Paul, MN. August 20, 1992.
436. Reproductive exams for cows: opportunities to teach the 10 point dairy quality assurance plan. IVMA Dairy Veterinary seminar. Dubuque, IA. September 18, 1992.
437. Somatic cell counts: where are you heading ? Dairy Lea Annual Meeting. Syracuse, NY. October 13, 1992.
438. Ruminant Digestive Tract wetlab. Nelson Dairy Consultant Dairy Management Workshops. Ames, IA. October 19, 1992.
439. Understanding and utilizing somatic cell counts wetlab. WVMA Annual Meeting. Lake Geneva, WI. October 23, 1992.
440. Optimizing reproduction and profitability. WVMA Annual Meeting. Lake Geneva, WI. October 24, 1992.
441. Troubleshooting milk quality problems. Babson Bros. Extra Care Dealer Dairy Workshops), Napierville, IL. October 27, 1992.
442. Prostaph rules and interpretations. DHIA Supervisor Training Conference. Dubuque, IA. November

- 3, 1992.
443. Role of the supervisor on farm and in DHIA. DHIA Supervisor Training Conference. Dubuque, IA. November 3, 1992.
 444. 200,000 – 400,000 SCC: now what? Nu-Ag Bosko Dairy Seminar. Oskaloosa, IA. Nov. 24, 1992.
 445. Reproductive management. Land O Lakes Circle of Quality Seminars. Thief River Falls, MN. January 15, 1991.
 446. Reproductive management. Land O Lakes Circle of Quality Seminars. Detroit Lakes, MN. January 15, 1991.
 447. Reproductive management. Land O Lakes Circle of Quality Seminars. Cannon Falls, MN. January 15, 1991.
 448. Mastitis management: can your SCC get too low? Land O Lakes Circle of Quality Seminars. Clermont, IA. January 24, 1991.
 449. Dry cow management and barrier teat dips. Dairy Technology Update Seminar. Berlin, WI. January 28, 1991.
 450. Sizing milking equipment to a herd's production level. Dairy Technology Update Seminar. Berlin, WI. January 28, 1991.
 451. Can we harvest more milk? Wisconsin Top Dairy Operator Seminar. Madison, WI. Jan. 29, 1991.
 452. Troubleshooting milking equipment. Wisconsin Top Dairy Operator Seminar. Madison, WI. Jan. 29, 1991.
 453. Can we harvest more milk? Wisconsin Top Dairy Operator Seminar. Appleton, WI. Jan. 30, 1991.
 454. Troubleshooting milking equipment. Wisconsin Top Dairy Operator Seminar. Appleton, WI. Jan. 30, 1991.
 455. Quality milk: how your veterinarian fits in. WI Quality Milk Council Workshops. Ixonia, WI. January 31, 1991.
 456. Treatment and residues; is the risk worth it? WI Quality Milk Council Workshops. Ixonia, WI. January 31, 1991.
 457. Prostaph training. DHI Supervisor Conference. Dubuque, IA. February 14, 1991.
 458. Optimizing reproduction and profitability. Arkansas DHIA Breeding and Milking For Profit Seminars. Fayetteville, AK. March 18, 1991.
 459. Mastitis: do I have a problem. Arkansas DHIA Breeding and Milking For Profit Seminars. Fayetteville, AK. March 18, 1991.
 460. The game of milking: more than just mastitis control. Arkansas DHIA Breeding and Milking For Profit Seminars. Fayetteville, AK. March 18, 1991.
 461. Optimizing reproduction and profitability. Arkansas DHIA Breeding and Milking For Profit Seminars. Ratcliff, AK. March 19, 1991.
 462. Mastitis: do I have a problem. Arkansas DHIA Breeding and Milking For Profit Seminars. Ratcliff, AK. March 19, 1991.
 463. The game of milking: more than just mastitis control. Arkansas DHIA Breeding and Milking For Profit Seminars. Ratcliff, AK. March 19, 1991.
 464. Optimizing reproduction and profitability. Arkansas DHIA Breeding and Milking For Profit Seminars. Conway, AK. March 20, 1991.
 465. Mastitis: do I have a problem. Arkansas DHIA Breeding and Milking For Profit Seminars. Conway, AK. March 20, 1991.
 466. The game of milking: more than just mastitis control. Arkansas DHIA Breeding and Milking For Profit Seminars. Conway, AK. March 20, 1991.
 467. Understanding and using somatic cell counts in dairy herd management. Oklahoma Milk Quality School for Veterinarians. Stillwater, OK. March 22, 1991.
 468. Can we harvest more milk? Oklahoma Milk Quality School for Veterinarians. Stillwater, OK. March 22, 1991.

469. Maintaining quality milk. Oklahoma Milk Quality School for Veterinarians. Stillwater, OK. March 22, 1991.
470. Understanding and using somatic cell counts to make management decisions and money. 55th annual OSU Dairy Days. Stillwater, OK. March 23, 1991.
471. Recycling newspapers for livestock bedding and plant mulch. Iowa Statewide Recycling Congress. Des Moines, IA. April 16, 1991.
472. Evaluating herd SCC and reproduction problems. ADM Dairy Feeds Program. Des Moines, IA. May 8, 1991.
473. Improving milk quality: lowering somatic cell count. 6th Annual Dairy Field Day. Naalehu, HI. May 31, 1991.
474. Improving milk quality: extending shelf life of milk. 6th Annual Dairy Field Day. Naalehu, HI. May 31, 1991.
475. Improving milk quality: lowering somatic cell count. Annual Dairy Field Day. Waianae, HI. June 6, 1991.
476. Maximizing milk quality premiums. Professional dairy management Seminar. Dubuque, IA. June 26, 1991.
477. Gimmicks to cut repro losses. Professional dairy management Seminar. Dubuque, IA. June 26, 1991.
478. The milking machine and mastitis. ABS Udder Care Modules. St. Joseph, MO. Aug. 1, 1991.
479. Proper milking procedures. ABS Udder Care Modules. St. Joseph, MO. Aug. 1, 1991.
480. Dinner with the doctors: herd observations. ABS Udder Care Modules. St. Joseph, MO. Aug. 1, 1991.
481. Proven mastitis control methods. NMC regional summer meeting. Madison, WI. August 29, 1991.
482. Understanding and using somatic cell counts. IVMA Dairy Practitioners Seminar. Dubuque, IA. September 20, 1991.
483. SCC and housing. Missouri Fieldmen's Conference. Springfield, MO. October 3, 1991.
484. Understanding SCC / economics of treating mastitis. IAMFES Annual meeting. Waterloo, IA. October 16, 1991.
485. Reproductive management. DEC-Boumatic National Dealers Meeting. Orlando, FL. October 23, 1991.
486. Integrating the DQA plan into action. Dairy Quality Assurance Regional QAP Workshop. LaCrosse, WI. October 30, 1991.
487. Milking procedures and functions of the milking system. Dairy Management and Milk Quality Seminar. Lancaster, WI. January 15, 1991.
488. Holding at 300,000 SCC: where to go from here. Dairy Management and Milk Quality Seminar. Lancaster, WI. January 15, 1991.
489. Milking procedures and functions of the milking system. Dairy Management and Milk Quality Seminar. Monroe, WI. January 16, 1991.
490. Holding at 300,000 SCC: where to go from here. Dairy Management and Milk Quality Seminar. Monroe, WI. January 16, 1991.
491. Milking procedures and functions of the milking system. Dairy Management and Milk Quality Seminar. Darlington, WI. January 17 1991.
492. Holding at 300,000 SCC: where to go from here. Dairy Management and Milk Quality Seminar. Darlington, WI. January 17, 1991.
493. Mastitis basics, proper milking practices, and functioning equipment. Milking Schools for the Hawaiian Dairy Industry. Maui, HI. January 22, 1990.
494. Mastitis basics, proper milking practices, and functioning equipment. Milking Schools for the Hawaiian Dairy Industry. Kauai, HI. January 23, 1990.
495. Mastitis basics, proper milking practices, and functioning equipment. Milking Schools for the Hawaiian Dairy Industry. Hilo, HI. January 24, 1990.

496. Mastitis basics, proper milking practices, and functioning equipment. Milking Schools for the Hawaiian Dairy Industry. Waianae, HI. January 29, 1990.
497. Mastitis basics, proper milking practices, and functioning equipment. Milking Schools for the Hawaiian Dairy Industry. Waimanalo, HI. January 30, 1990.
498. Milk quality: somatic cell counts and beyond. Mid-American Dairymen Directors Conference, Kansas City, MO. February 6, 1990.
499. Can somatic cell counts get too low? National Mastitis Council Annual Meeting, Louisville, KY February 14, 1990.
500. Can somatic cell counts get too low? Ohio Dairy and Food Industry Conference. Columbus, OH. February 15, 1990.
501. 300,000 – 400,000 SCC: so now what? Ohio Dairy and Food Industry Conference. Columbus, OH. February 15, 1990.
502. Mastitis: do I have a problem. Arkansas DHIA Milking for Profit Seminar. Conway, AK. March 5, 1990.
503. The game of milking. Arkansas DHIA Milking for Profit Seminar. Conway, AK. March 5, 1990.
504. Milk quality: the whole picture. Arkansas DHIA Milking for Profit Seminar. Conway, AK. March 5, 1990.
505. Mastitis: do I have a problem. Arkansas DHIA Milking for Profit Seminar. Ratcliff, AK. March 6, 1990.
506. The game of milking. Arkansas DHIA Milking for Profit Seminar. Ratcliff, AK. March 6, 1990.
507. Milk quality: the whole picture. Arkansas DHIA Milking for Profit Seminar. Ratcliff, AK. March 6, 1990.
508. Mastitis: do I have a problem. Arkansas DHIA Milking for Profit Seminar. Fayetteville, AK. March 7, 1990.
509. The game of milking. Arkansas DHIA Milking for Profit Seminar. Fayetteville, AK. March 7, 1990.
510. Milk quality: the whole picture. Arkansas DHIA Milking for Profit Seminar. Fayetteville, AK. March 7, 1990.
511. Newspaper may be animals' best friend for a good night's sleep. Iowa Newspaper Association Annual Meeting, Des Moines, IA. April 7, 1990.
512. Milking and milk quality modules (5 modules). Mid States DHIA Supervisor Conference. Ames, IA. July 16-17, 1990.
513. Understanding somatic cell counts. Pro-Ag National Jamboree, St. Paul, MN. July 24, 1990.
514. Contagious mastitis. International Association of Milk, Food, and Environmental Sanitarians Annual Meeting. Chicago, IL. August 8, 1990.
515. Environmental mastitis. Mastitis Think Tank – Upjohn Company, Kalamazoo, MI. September 12, 1990.
516. Persistency of barrier teat dips and other barrier products on dry cows. International Mastitis Symposium and AABP. Indianapolis, IN. September 16, 1990.
517. In vitro growth of environmental mastitis pathogens in various bedding materials. International Mastitis Symposium and AABP. Indianapolis, IN. September 16, 1990.
518. Environmental mastitis. IVMA Bovine Dairy Seminar. Dubuque, IA. September 28, 1990.
519. Addressing milk quality issues. IAMFES State Meeting, Waterloo, IA October 17, 1990.
520. Role of milking equipment in your mastitis management program. Milk Quality Cow Kollege, Manawa, WI. January 3, 1989.
521. Role of milking equipment in your mastitis management program. Milk Quality Cow Kollege, Shawano, WI. January 3, 1989.
522. Can somatic cell counts get too low? Wisconsin Dairy Field Representatives Conference, Madison, WI. February 1, 1989.

523. Milk quality tests: interpretation and implementation. Four State Dairy Management Roadshow Conferences. Arlington, WI. March 7, 1989.
524. Milk quality tests: interpretation and implementation. Four State Dairy Management Roadshow Conferences. Freeport, IL. March 8, 1989.
525. Milk quality tests: interpretation and implementation. Four State Dairy Management Roadshow Conferences. Calmar, IA. March 9, 1989.
526. Milk quality tests: interpretation and implementation. Four State Dairy Management Roadshow Conferences. Minneapolis. March 10, 1989.
527. Somatic cell count considerations. Iowa Dairy Products Association Executive Committee meeting. Ames, IA. April 14, 1989.
528. SCC records/ interpretations. DHIA New Supervisor Conference. Dubuque, IA. May 10, 1989.
529. Making milk with improved machine function. DeLaval Milking Equipment National Planning Meeting, Kansas City, MO. May 15, 1989.
530. Evaluating your on farm milk quality program. Tri County Milk Quality Council Twilight Meeting. Sheboygan, WI. July 20, 1989.
531. Can somatic cell counts get too low? National Mastitis Council Summer Meeting, Kansas City, MO. August 17, 1989.
532. Producing quality milk: panel. Illinois Dairy Fieldmen Conference, Champaign, IL. September 11, 1989.
533. Can somatic cell counts get too low? Illinois Dairy Fieldmen Conference, Champaign, IL. September 11, 1989.
534. I'm at 300,000CC: now what? Illinois Dairy Fieldmen Conference, Champaign, IL. September 12, 1989.
535. Accurate diagnosis of staphylococcus aureus mastitis. IVMA Dairy Seminar, Dubuque, IA. September 15, 1989.
536. Can somatic cell counts get too low? IVMA Dairy Seminar, Dubuque, IA. September 15, 1989.
537. When production goes to pot: herd investigation panel. IVMA Dairy Seminar, Dubuque, IA. September 15, 1989.
538. Can somatic cell counts get too low? Mid America Dairymen Annual Field Representative Conference, Kansas City, MO. October 17, 1989.
539. I'm at 300,000: now what. Land O'Lakes Dairy Technician Seminar, St. Paul, MN. Oct. 31, 1989.
540. Can somatic cell counts get too low? Land O'Lakes Dairy Technician Seminar, St. Paul, MN. Oct. 31, 1989.
541. Estron: trials and tribulations. Land O'Lakes Dairy Technician Seminar, St. Paul, MN. Oct. 31, 1989.
542. Dynamic of mastitis(2). Iowa Sheep Symposium, Cedar Rapids, IA, November 24-25, 1989.
543. In depth look at milking procedures and management. Milk Quality Symposium for Bovine Practitioners. Stevens Point, WI. February 3, 1988.
544. Influencing farmers to use DHI SCC. National Mastitis Council Annual Meeting. Reno, NV. February 10, 1988.
545. Getting the most from your DHI records: milk quality and reproduction. South Dakota Annual DHIA meeting. Watertown, SD. March 19, 1988.
546. Managing your on farm milk quality program. Watkin's Feed Milking Management and Mastitis Seminar. Winona, MN. April 13, 1988.
547. Ruminant GIT wet lab. Purina Mills Dairy Nutrition School. Oelwein, IA. June 9, 1988.
548. Dairy extension research. Iowa Agricultural Youth Institute. Ames, IA. July 13, 1988.
549. Improved milking, higher quality milk, and greater dairy profits. DHIP Analyst Development Conference. Dubuque, IA. August 22, 1988.
550. Making milk with good machine function. IVMA Bovine Practitioners Seminar Dubuque, IA

- September 23, 1988.
551. The game of milking. Annual Montana Dairy Management Conference. Billings, MT. November 10, 1988.
 552. Milk quality management. Annual Montana Dairy Management Conference. Billings, MT. November 10, 1988.
 553. Reproductive management. Annual Montana Dairy Management Conference. Billings, MT. November 10, 1988.
 554. What's old and new in DHIA. DHIA Supervisor Training. Fargo, ND. December 1, 1988.
 555. The game of milking. DHIA Supervisor Training. Fargo, ND. December 1, 1988.
 556. What's new in DHIA. DHIA Annual Meeting. Fargo, ND. December 2, 1988.
 557. Understanding the DHI-SCC report. DHIA Annual Meeting. Fargo, ND. December 2, 1988.
 558. The Game of Milking. DHIA Annual Meeting. Fargo, ND. December 2, 1988.
 559. Mastitis: do I have a problem. Oklahoma DHIA Milking for Profit Seminar. Cheyenne, OK. December 5, 1988.
 560. The game of milking. Oklahoma DHIA Milking for Profit Seminar. Cheyenne, OK. December 5, 1988.
 561. Milk quality: the whole picture. Oklahoma DHIA Milking for Profit Seminar. Cheyenne, OK. December 5, 1988.
 562. Mastitis: do I have a problem. Oklahoma DHIA Milking for Profit Seminar. Chickahsa, OK. December 6, 1988.
 563. The game of milking. Oklahoma DHIA Milking for Profit Seminar. Chickasha, OK. December 6, 1988.
 564. Milk quality: the whole picture. Oklahoma DHIA Milking for Profit Seminar. Chickasha, OK. December 6, 1988.
 565. Mastitis: do I have a problem. Oklahoma DHIA Milking for Profit Seminar. Stillwater, OK. December 7, 1988.
 566. The game of milking. Oklahoma DHIA Milking for Profit Seminar. Stillwater, OK. December 7, 1988.
 567. Milk quality: the whole picture. Oklahoma DHIA Milking for Profit Seminar. Stillwater, OK. December 7, 1988.
 568. Mastitis: do I have a problem. Oklahoma DHIA Milking for Profit Seminar. Pryor, OK. December 8, 1988.
 569. The game of milking. Oklahoma DHIA Milking for Profit Seminar. Pryor, OK. December 8, 1988.
 570. Milk quality: the whole picture. Oklahoma DHIA Milking for Profit Seminar. Pryor, OK. December 8, 1988.
 571. DHI records and dairy financials. Agricultural Credit School, Ames, IA. June 16, 1987.
 572. Milk quality and mastitis: what I see. IVMA Bovine Practitioners Seminar, Dubuque, IA. September 18, 1987.
 573. Goat mastitis control programs. Iowa Dairy Goat Assoc. Seminar. Ames, IA. Oct. 17, 1987.
 574. Milking systems: structure, function, and fixing. Pro-Ag Technician Seminar, Des Moines, IA. October 23, 1987.
 575. Milking for profits. 2nd Annual Stevens Point Veterinary Clinic Dairy Management Seminar. Stevens Point, WI. November 23, 1987.
 576. Milk quality and mastitis control. Missouri Dairy Days. Concordia, MO. November 25, 1987.
 577. Reproductive management for success. Land O'Lakes QQM Dairy Technician Symposium, St. Paul, MN. November 5, 1986.
 578. Mastitis and milk quality management for success. Land O'Lakes QQM Dairy Technician Symposium, St. Paul, MN. November 6, 1986.
 579. Mastitis research programs at ISU. Mastitis Research Workers Conference, Hershey, PA. November

- 13, 1986.
580. Understanding the DHI-SCC numbers. North Dakota DHI Supervisor Training, Jamestown, ND. December 4, 1986.
581. Helping your producers maximize quality milk. North Dakota DHI Supervisor Training, Jamestown, ND. December 4, 1986.
582. Understanding the DHI-SCC numbers. North Dakota Annual DHIA meeting, Jamestown, ND. December 5, 1986.
583. Helping your producers maximize quality milk. North Dakota Annual DHIA meeting, Jamestown, ND. December 5, 1986.
584. Using somatic cells as a model for immunity. Pro-Ag National Scientific Symposium, St. Paul, MN. (sole invited academic faculty) August 30, 1985.
585. Mastitis control and milk quality (the new guy on the block)! Iowa Veterinary Medical Association (IVMA) Bovine Practitioners Symposium. Dubuque, IA. September 13, 1985.
586. Mastitis control and milk quality (the new guy on the block)! Annual Mtg. of Minnesota Assoc. of Milk, Food, and Environmental Sanitarians.(AMFES) St. Paul, MN. September 20, 1985.
587. Mastitis control and milk quality (the new guy on the block)! Annual Mtg. of Iowa Assoc. of Milk, Food, and Environmental Sanitarians.(AMFES) Ames, IA. October 16, 1985.
588. Milk quality troubleshooting. Dairy Veterinary Symposium. Norden Laboratories, Lincoln, NE. October 25, 1985.

EDITORIAL BOARDS / PANELS /REVIEWS

Journal of Dairy Science	Dairy, Food, and Environmental Sanitarians
Food Protection Trends	Extension Dairy Quality Assurance Program
Journal of Dairy Research	Small Business Innovative Research Grants
Journal of Veterinary Medicine	CAST National Essay Contest
Veterinary Microbiology	Canadian NSERC Grants
Indian Journal of Animal Science	Journal of American Veterinary Medical Association
Journal of Physiology and Nutrition	Journal of Small Ruminant Research

INTERNATIONAL ACTIVITIES

- 1986 Served as research mentor for Zondai Muyengwa from Zimbabwe
- 1987 Hosted 8 one day visits with international veterinarians (with Dr. Carmichael)
- 1988 Hosted Turkish veterinarian for 2 week internship in dairy
Hosted 6 one day visits with international veterinarians (with Dr. Carmichael)
- 1989 Served as research mentor for Ismail Mumin from India
- 1990 Served as research mentor for Guftar Ahmad from Pakistan
- 1991 Hosted 11 one day visit with 20 international veterinarians (with Dr. Carmichael)
- 1992 1 day meetings with visitors from Soviet Union, Turkey, Japan, and China
Conducted three week dairy shortcourse (intern) with 3 Pakistani veterinarians
Conducted one day dairy course for 12 Japanese extension agents
- 1993 Conducted sixteen day dairy exchange in Hebei Province, People's Republic of China as part of the Iowa Sister States Program (on farm and processing plant evaluations/ seminars/ colleges)
- 1994 Served as research mentor for Mustaq Jokhio from Pakistan
Coordinated visits by dairy personnel from Turkey, Morocco, and Russia
- 1997 Made 2 invited presentations at the Western Canadian Dairy Symposium, Red Deer, Alberta
Hosted 5th year British veterinary student for 2 weeks

- Conducted three half day technical dairy sessions with 6 international veterinarians
- 1998 Hosted 3 Indian scientist for one day each – ISU-India World Bank project
- Conducted three half day technical dairy sessions with 6 international veterinarians
- Hosted 1 day central Iowa dairy tour for 15 Italian agricultural professionals
- Developed total curriculum /coordinated 1 week short course for 14 Argentinan veterinarians
- Invited shorcourse / 2 other presentations: Panamerican Milk Quality Congress – Yucatan, MX
- 1999 Made 2 invited presentations at the Canadian Veterinary Med meetings, Calgary, Alberta.
- Hosted 1 Indian scientist for one day– ISU-India World Bank project
- Conducted four half day technical dairy sessions with 12 international veterinarians
- Met with Thailand group to discuss joint projects
- Met with Mexican group and Alliant Energy to discuss dairy technologies
- Developed/ coordinated 3 day on farm dairy stay for 6 Japanese dairy farm wives.
- Worked with 2 visiting veterinarians from Latvia
- Served as research mentor for Jose Nestor Caamano from Argentina
- 2000 Made 4 presentations at Ruminant Mammary Gland Immunity Symposia, Stressa, Italy
- Made 3 presentations at Pacific Mastitis / Milk Quality Congress, Nagano, Japan
- Invited technical presentations at Delaval Training Sessions: Drongen, Belgium
- Invited technical presentations at Delaval Training Sessions: Stressa, Italy
- Served on research committee of Mikal Lunak from the Czech Republic
- 2001 Mentor for Cecilia Fernandez from Argentina for 2 years (dairy research intern)
- Mentor for Jordi Santaularia from Spain : 12 day dairy internship
- Made 3 presentations at NMC/AABP International Mastitis Symposium, Vancouver, BC, Can.
- 2002 Mentor for Diamaris Trinidad from Puerto Rico – undergraduate research project
- Hosted 3 Chinese veterinarians and 1 Italian veterinarian for 1 day dairy training
- 2003 Conducted 3 hour dairy workshop for Chinese delegation (6 people)
- Hosted 2 one day dairy tours and taught 3 additional hours for 12 Georgian dairy personnel.
- 2004 Made 2 invited presentations at the Western Canadian Dairy Symposium, Red Deer, Alberta
- Hosted 3 Danish veterinarians in our VDPAM 484 Dairy Production Medicine course
- Discussions with India research group from Iowa City
- 2005 Hosted 2 Bulgarian veterinarians in our VDPAM 484 Dairy Production Medicine course
- Worked intensely for 10 weeks with Bulgarian veterinarians on animal welfare programs
- Research mentor for Cecilia Fernandez, Argentine student at Massey University, New Zealand
- 2006 Made 2 invited presentations at Dairy Focus Conference, Greenwich, Nova Scotia
- Made one invited presentation at NMC summer meeting, Charlottetown, PEI, Can
- Hosted 8 Danish veterinarians and scientists for 2 days (NADC and commercial farms)
- Development of plans for Pastoral Farming Systems study abroad course to New Zealand
- 2007 Research mentor for Richmond Aryeetey from Ghana
- Co- developed / conducted New Zealand Pastoral Farming Systems study abroad course
- Mentored Franz Ortiz from Austria on 2 dairy projects (6 months)
- Developed book “Biosecurity in Farm Animals” with Bulgarian University veterinarians
- 2009 Hosted and toured dairy farms with 30 Russian farmers / agriculturalist
- Developed/ conducted 2 week dairy training for 13 Bulgarian agricultural scientists
- 2010 Co- developed / conducted New Zealand Pastoral Farming Systems study abroad course
- Conducted invited classes (Trakia University), dairy workshops (2), dairy farm evaluations (6) and government/ university dairy discussions in Bulgaria (8 days)
- Hosted 12 Armenian visitors and gave dairy tours and educational sessions at ISU Dairy.
- 2011 ISU Dairy tour and invited presentation on US dairy systems and management for 16 Argentine agricultural professionals
- Conducted ISU dairy tour and seminar for 35 dairyman and veterinarians from 11 countries affiliated with OHI / International Protein Sires

- Hosted 4 Bulgarian visitors and gave dairy tours and educational session at ISU Dairy.
 Hosted 3 animal scientists from India and gave dairy tour at ISU Dairy.
 Helped develop and conduct a visiting scientist educational program for Dr. Bernouli from Kosova (10 week program, responsible for 15%)
- 2012 Co- developed / conducted New Zealand Agricultural Systems study abroad course
 ISU Dairy tour and invited presentation on US dairy systems and management for 37 foreign veterinarians in conjunction with USDA Veterinary Service.
 Hosted 4 Indian visitors and gave dairy tours and educational session at ISU Dairy.
 Interacted with a visiting dairy farmer / veterinarian from Kosovo. (4 sessions including ISU Dairy)
 Interacted with a visiting Ethiopian scientist (5 sessions including ISU Dairy and framework for continued collaborative research and PhD program in his country).
- 2013 Hosted dairy tour and workshop for 30 international dairy consultants (with Alltech).
 Dairy Extension and Veterinary workshops (5) and dairy farm consultations (8) as part of USDA Borlaug Exchange. Kosovo. 8 days.
 Hosted 3 German dairy industry personnel and gave dairy tours and educational session at ISU Dairy.
 Hosted dairy tour and workshop for 30 Chinese dairy consultants (with Genex).
 Hosted dairy tour and workshop for 10 Chinese dairy nutrition consultants (with Alltech).
 Hosted dairy tour and discussion for 6 visiting Russian agricultural specialists.
 Use of corn bi- products in the dairy industry: a summary presented to Moroccan Feed Industry specialists (in conjunction with IA Corn Board and US Feed Grains Council).
 Developed plans for 2014 COA New Zealand Agricultural Systems study abroad course.
- 2014 Hosted dairy tour /workshop for 5 European dairy chemical manufacturers (with A&L labs).
 Hosted dairy tour and workshop for 12 Ethiopian dairy farmers (with ISU Int. AgProg).
 Co- developed/conducted New Zealand Agricultural Systems study abroad course (22 students)
 Participant in Iowa: Kosovo Think Tank on Agricultural Exchanges (with IA. Dept of Ag.)
 Hosted dairy tour and workshop for 5 Ukrainian College of Agriculture Deans and faculty

INSTITUTIONAL SERVICE

Animal Science Department

- Youth 4-H Dairy Roundup Committee (1986-present) (co-developed in 1986)
- Seminar committee (1986-1993, 1995- 2002, 2009-present; chair 87-88, 99-00)
- Picnic Committee (1986-present); (co-developed in 1986, chair 1987-present)
- Faculty Improvement Leave (1987)
- Academic Quadrathlon (1988-2008) (on committee or furnish dairy lab practicum)
- Chuckwagon Breakfast (1988, 1990-2004,): chair (1995-96)
- DEO Search committees (1991, 2001-02)
- New Dairy Farm Committee (1994-2008; chaired planning, design, and building groups)
- Veishea Poster Displays (1996-1998) initiated and chaired.
- ISU Dairy Report (1995-1998); initiated, chaired, lead editor.
- Dairy Nutrition Faculty Search Committee (1999-2000)
- Animal Science Blood Drives with Mary Greeley (2000-2004); initiated and chaired.
- Animal Science Poster Fair (2000-present); initiated and chair.
- Extension Cost Recovery Committee (2001-2002)

- Farm Task Force Committee (2001-2002)
- Farm User Committee (2002-2010)
- Scholarship Committee (2002-2008); chair 2003-2009.
- Relay for Life Animal Science team: initiated and co-coordinator (2003-2012)
- Post Tenure Review Committees (2003, 2007, 2010, 2012, 2013)
- Undergraduate curriculum (2003-2004)
- ISU Dairy Farm Reproduction Committee (2004-2007 chair; 2012-present))
- ISU Dairy Farm Milk Quality Committee (2004-2007; 2012-present)
- ISU Animal Industry Report Committee (2004-present; dairy editor)
- Scholarship of Extension Committee (2006)
- Undergraduate Poster Contest (2007-present); initiated and chair.
- Social committee (2010 – present)
- Animal Science Dept. Chair search committee (2013-14)
- Dairy Science Club Advisor (2012-2013)

Veterinary College

- VDPAM Curriculum Committee (2006-present)
- VDPAM Dairy group: (2006-present); founder and chair (2006-2007).
- Search committees for 2 University veterinarians (2005, 2006)

College of Agriculture / Iowa State University

- Iowa Foundation for Agriculture Awareness (1989-1992)
- Agriculture and the Environment Committee (1991-92)
- Scholarship Committee (2005-2009); chair 2006 – 2009)
- Agriculture and Natural Resources Livestock Extension Committee (2006-present)
- ANR Extension POW Team Leaders Group (2010 – present)
- ANR Extension Professional Development Committee (2012)