NATASHA L. BELL

ASSISTANT PROFESSOR

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EDUCATION

Doctor of Philosophy	Animal Science, Ruminant Nutrition Texas A&M University, May 2015 Dissertation: Supplementation strategies to improve efficiency of forage utilization and mitigate enteric methane production in *Bos indicus* and *Bos taurus* cattle
Master of Science	Agriculture, Animal Nutrition Stephen F. Austin State University, 2012 Thesis: Using near-infrared reflectance spectroscopy as a predictor of *in vitro* true digestibility of bahiagrass (*Paspalum notatum*)
Bachelor of Science	Animal Science Minor in Agricultural Economics and Agricultural Business Texas A&M University, 2005 Cum Laude
Associate in Applied Science	Aviation Maintenance Technology Community College of the Air Force, 2009

PROFESSIONAL EXPERIENCE

ASSISTANT PROFESSOR

Department of Animal, Rangeland, and Wildlife Sciences, Texas A&M University – Kingsville

Dates: March 2015 - Present

Current Appointment: 75% Teaching, 25% Research

Responsibilities: Teach courses at both the undergraduate and graduate level in general nutrition and nutritional research methodologies while providing students with learning opportunities through their involvement in research projects. Mentor both graduate and undergraduate students interested in animal nutrition as they develop the knowledge and skills required to be successful in their future careers. Develop a nationally and internationally recognized research program in the areas of forage utilization, supplementation and grazing management. Secure sufficient funding to maintain a robust research program and support graduate training. Offer research skills and knowledge to collaborative research programs from a broad array of disciplines and locations. Serve as a resource for extension personnel, industry stakeholders, and producers in the state of Texas and beyond. Maintain active involvement in the beef cattle industry and represent Texas A&M University-Kingsville to the beef cattle industry at functions, in publications, and on committees.

GRADUATE TEACHING AND RESEARCH ASSISTANT

Department of Animal Science, Texas A&M University

Dates: August 2012 – February 2015

Teaching Responsibilities: Responsible for teaching a feeds and feeding lab course in which students learn the basic characteristics of forages and feedstuffs, various methods used for analyzing feedstuffs, and methods for formulating feed rations, manually as well as utilizing current NRC tables and programs for formulation.

Research Responsibilities: Design and pursue research studies regarding the effects of ionophores on nutrient utilization and ruminal fermentation parameters in cattle. Responsible for aiding in a variety of research projects conducted by graduate students working in the ruminant nutrition lab. Represent the Texas A&M University system by presenting current research at local, state, and national conferences.

LECTURER

Department of Animal Science, Texas A&M University

Dates: January 2013 – December 2014

Responsibilities: Responsible for developing and teaching an undergraduate animal nutrition and feeding course. Develop lecture material to stimulate the interest of non-animal science majors in the field of animal nutrition. Present lecture content in a manner that will provide the background information necessary for non-majors, while teaching in depth topics in nutrition and feeding. Design homework assignments to enhance student understanding of feed ration formulation for the various livestock species. Mentor undergraduate students interested in animal nutrition and aid them in the exploration of potential undergraduate research, graduate/professional school, and career options.

TEACHER

Dates: August 2005 – August 2012
Responsibilities: Served as agricultural science teacher, district FFA advisor, and science teacher. Supervised students within the classroom, shop, and other assigned areas; developed lesson plans and delivered group and individual student instruction within established curriculum guidelines in classroom and shop; collaborated with other teachers, professional staff, and administrators in addressing instructional and/or classroom issues.
Specific duties as Science Teacher: Planned and organized labs related to curriculum. Attended workshops to become aware of state science classroom safety standards in an effort to maintain the safety of my students and classroom at all times.
Specific duties as Agricultural Science Teacher and FFA advisor: Planned and organized school stock show and aided in planning of county shows. Responsible for overseeing projects for county and major shows. Hold NCCER certification and responsible for certifying students in Core Curriculum, Construction Technology and Welding Levels I, II, and III. Prepared students for FFA curriculum development events and leadership development events on local, district, area, and state levels.

MILITARY

Branch of Service: United States Air Force Reserves
Dates of Service: May 2003 – Present
Job Title: Aircraft Structural Maintenance Craftsman
Responsibilities: Perform aircraft structural maintenance on various aircraft to include A-10's and B-52's. Proficient in planning, laying out, fabricating, modifying, repairing, assembling, and installing sheet metal parts, items, and assemblies. Use hand and power tools including, but not limited to shears, brakes, drill press, pneumatic rivet guns, drills, tube bender, grinders, and sanders. Interpret blueprints and drawings from technical orders and engineering documentation; fiberglass and honeycomb repairs and modifications; identification and removal of corrosion; preparation of surfaces for paint, priming and painting aircraft and manufactured parts; designing, creating, and applying aircraft decals. Also responsible for guiding and instructing young enlisted personnel to ensure they have the tools and training required for success in all facets of the job.
Awards: 307th Maintenance Squadron Certificate of Recognition for Outstanding Performance on the AF Personnel Fitness Test, 2010, 2011, 2012, 2013, 2014; 307th Maintenance Squadron Fabrication Flight Technician of the Quarter, Fourth Quarter 2012; Certificate of Induction into the Senior Noncommissioned Officer Corp of the USAF, 2011; 917th Maintenance Squadron Fabrication Flight Technician of the Quarter, First Quarter 2010; 917th Maintenance Squadron Fabrication Flight Technician of the Year, 2010; 917th Maintenance Squadron Airman of the Quarter, First Quarter 2005; 313th Air Force Detachment Command, Naval Air Technical Training Center, Pensacola NAS Airman of the Month, March 2004.

TEACHING

Teaching Philosophy

As an educator, I strive to engage, challenge, and inspire growth in students, instilling in them a passion for knowledge and understanding that will provide them with the tools necessary for contributing to society. Transfer of knowledge and understanding are facilitated by integrating teaching, research, and application into instruction. The opportunity to apply knowledge provides students with a strong foundation for understanding.

An understanding of students is essential for developing successful and meaningful instruction. The current generation of college students is extremely social, technologically sophisticated, and generally impatient. Additionally, observation of the current animal science student demographic reveals a transformation from a once predominantly male population to an increasingly female dominated population in many universities. Being cognizant of the characteristics of students allows for the development of instruction that is engaging and appealing to them.

By embracing technology and utilizing new instructional material with current, relatable examples, students become engaged in instruction. Stimulating interest in new concepts arouses questions and encourages critical thinking skills. When students are adequately engaged, they are motivated to critically assess new information, demonstrating understanding and illustrating instructional success. I set high standards for myself, striving to return student work and e-mails in a timely fashion and with appropriate feedback. Keeping student progress current and easily accessible enables them to gauge individual progress allowing for the development of academic confidence.

Classroom Instruction: Classroom instruction provides an opportunity to significantly impact a large number of students instilling in them a passion for animal science. During classroom instruction engaging and challenging students allows them to critically evaluate new ideas, which is essential to mastering the rudimentary scheme of a topic. Through classroom learning, students are given the opportunity to demonstrate their knowledge of introduced topics by relating and applying newly acquired information to their existing knowledge base allowing them to develop a more complete understanding of the overarching concept. It is essential that students not only relate new information to existing knowledge, but that they are able to think about and evaluate this information in a manner that will allow them to apply it to unfamiliar topics and disciplines.

Individual Instruction and Advising: Individual instruction and advising provides an opportunity for evaluating the level of understanding and competency attained in the classroom. Weaknesses can be identified and addressed while strengths can be built upon. Individual instruction provides an ideal opportunity for mentoring, allowing for discussions of student interests, goals and the exploration of potential opportunities available to them including research, internships, graduate/professional school, and career options. Mentoring these future animal science professionals can equip them with the knowledge and skills required for their successful contribution to our industry.

AWARDS

2013 – Texas A&M University Department of Animal Science Dr. Ronnie L. Edwards Graduate Teaching Award

COURSES TAUGHT

SUMMARY TABLE

COURSES	Credit Hours	Frequency Taught	Students Enrolled	Student Evaluations
Undergraduate Courses				
ANSC 4307	3	2015A	22	4.73
ANSC 2307	3	2015C (2 sec.)	50	N/A
ANSC 2310	3	2015C	30	N/A
ANSC 320	3	2013A, 2013C,	80	4.79
		2014A	100	4.05
		2014C	80	4.83
			105	4.50
Labs				
ANSC 318	1	2012C,	19	N/A
		2013B	25	

Texas A&M University-Kingsville

ANSC 2307: Principles of Feeds and Feeding, 3 Credit Hours
Chemical composition of feeds, utilization of nutrients, characteristics of feedstuffs and feed usage.

ANSC 2310: Livestock Management Techniques, 3 Credit Hours
Application of animal handling and management techniques for major and minor livestock species including behavior of livestock species relevant to handling, methods of restraint and blood sampling.

ANSC 4307: Animal Nutrition, 3 Credit Hours
Chemical composition of the animal, functions of nutrients, digestion, metabolism, physiological effects of feed additives.

Texas A&M University, College Station

ANSC 320: Animal Nutrition and Feeding, 3 Credit Hours
Nutritional functions of water, protein, carbohydrates, fats, minerals and vitamins and their digestion, absorption, use and excretion; energy, protein and forage feedstuff characteristics and processing; nutritional requirements, ration formulation and feeding methods for farm animals; general course for non-animal science majors.

ANSC 318 Lab: Animal Feeds and Feeding Lab
Characteristics of feedstuffs used in livestock enterprises; manual and computer ration formulation procedures and life cycle nutritional management of beef, swine, sheep, dairy, horses, fish and pets; methods of grain, protein supplement and forage processing and evaluation; commercial and on-the-farm feed mixing methods and feed control laws.

UNDERGRADUATE GUEST LECTURES

COURSE	Topic	Date
TAMU: ANSC 303	Energy Metabolism	11/3/2014
TAMU: ANSC 318	Feedstuff Characteristics: Forage Feedstuffs	7/24/2013
TAMU: ANSC 318	Feedstuff Characteristics: Energy and Protein Feedstuffs	7/23/2013

TEACHING IMPROVEMENT

TITLE	Location	Date
Migrating Course Content from eLearning to eCampus	College Station, TX	6/24/2013
Getting Started with eCampus	College Station, TX	6/24/2013
Intro to eCampus Webinar	College Station, TX	6/21/2013
Developing a Teaching Portfolio	College Station, TX	3/6/2013
Teaching Assistant Training	College Station, TX	8/21-23/2012

RESEARCH

Program Statement: *Improving economic and environmental sustainability of ruminant production by enhancing forage utilization through supplement strategies and grazing management techniques to meet the escalating needs of society.*

Research is the cornerstone of a successful academic program and, when integrated with teaching, enables students to apply and expand upon knowledge obtained through coursework, develop written and oral communication skills, and provides an opportunity for collaboration. The goal of my research is to develop a cutting edge program that is nationally and internationally recognized. While my research interests include nutrition principles, rumen microbiology, and forage management, the focus of my program lies within areas that will directly benefit producers both in Texas and globally.

The USDA reports that 80% of land is not suitable for production of agricultural crops. However, the symbiotic relationship between ruminant animals and their resident ruminal microbial population allows them to effectively convert fibrous materials, unusable by other species, into usable energy, essentially converting unusable forage into high-quality protein. Fibrous diets, however, are associated with decreased production efficiency and increased methane emission. My research program has centered on utilizing supplements for improving efficiency of forage utilization and mitigation of enteric methane production in grazing or forage fed beef cattle. Research has the unique ability to forge connections across disciplines, enriching the educational experience. Although projects have primarily addressed nutritional effects of ionophores and protein supplements, collaborations with rumen microbiologists forage specialists, have enabled the evaluation of ionophore and protein supplement impact on rumen microbial populations, methane production, and forage to develop a comprehensive understanding of the forage-livestock relationship.

I would like to focus future research on developing strategies for improving forage utilization of beef cattle to ultimately address the issue of sustainability and the escalating needs of society. The global challenge for agriculture to meet the needs of a growing population requires the production of more beef using fewer resources. Optimizing forage-livestock management systems by developing and implementing economic strategies to expand forage production through grazing management or incorporation of various new technologies can address this challenge. Development of a research program focused on improving and sustaining the forage-livestock system to meet these needs, is largely constrained by the challenge of securing sufficient financial resources. Thus, initial effort will go toward securing extramural funding from a variety of sources. Funding sources that I have targeted include government and industry grants. Research support from allied industry partners will help increase exposure of undergraduate and graduate students for later job placement, a key goal of my teaching and research program.

BOOK CHAPTERS

Bell, N. L., T. A. Wickersham, V. Sharma, T. Edrington, T. R. Callaway. 2015. Ionophores: a tool for improving ruminant production and reducing environmental impact. *In:* Livestock Production and Climate Change, Eds. P. K. Malik, R. Bhatta, J. Takahashi, R. Kohn and C. S. Prasad. CAB International, Oxfordshire, UK.

THESES

Bell, N. L., R. C. Anderson, T. R. Callaway, J. E. Sawyer, L. A. Redmon, W. S. Ramsey, and T. A. Wickersham. 2015. Supplementation strategies to improve efficiency of forage utilization and mitigate enteric methane production in *Bos indicus* and *Bos taurus* cattle. Ph.D. Dissertation. Texas A&M University, College Station, TX.

Bell, N. L., J. L. Young, T. A. Wickersham, E. G. Brown, M. Harris. 2012. Using near-infrared reflectance spectroscopy (NIRS) as a predictor of *in vitro* true digestibility (IVTD) of bahiagrass (*Paspalum notatum* Flugge). M.S.Thesis. Stephen F. Austin State University, Nacogdoches, TX.

PUBLICATIONS IN PROGRESS

Bell, N. L., T. A. Wickersham, and T. R. Callaway. *In Progress*. Review: Ionophores: mechanisms of action and effects on ruminant production.

Bell, N. L., R. C. Anderson, S. L. Murray, J. C. McCann, K. K. Weldon, and T. A. Wickersham. *In Progress*. Effect of level and source of supplemental protein on rate of ruminal ammonia production and concentrations of amino acid-utilizing and trypticase-metabolizing bacteria in *Bos taurus* and *Bos indicus* steers fed low-quality forage.

Bell, N. L., R. C. Anderson, S. L. Murray, J. C. McCann, K. K. Weldon, A. D. G. Wright, and T. A. Wickersham. *In Progress*. Effect of level and source of supplemental protein on rate of ruminal methane production and methanogen and protozoa concentration in *Bos taurus* and *Bos indicus* steers fed low-quality forage.

Bell, N. L, R. C. Anderson, T. R. Callaway, M. O. Franco, J. E. Sawyer, and T. A. Wickersham. *In Progress*. Effect of monensin inclusion on intake, digestion, and ruminal fermentation parameters in *Bos indicus* and *Bos taurus* steers consuming bermudagrass hay.

Bell, N. L, T. R. Callaway, R. C. Anderson, M. O. Franco, J. E. Sawyer, and T. A. Wickersham. *In Progress*. Effect of monensin withdrawal on intake, digestion, and ruminal fermentation parameters in *Bos indicus* and *Bos taurus* steers consuming bermudagrass hay

ABSTRACTS

Bell, N. L., T. R. Callaway, R. C. Anderson, M. O. Franco, J. E. Sawyer, and T. A. Wickersham. 2015. Effect of monensin inclusion on intake and digestion in Bos indicus and Bos taurus steers consuming bermudagrass hay. J. Anim. Sci. 93 (Suppl. s3):436.

Bell, N. L., R. C. Anderson, T. R. Callaway, M. O. Franco, J. E. Sawyer, and T. A. Wickersham. 2015. Effect of monensin inclusion on ruminal fermentation parameters in Bos indicus and Bos taurus steers consuming bermudagrass hay. J. Anim. Sci. 93 (Suppl. s3):868.

Bell, N. L., T. R. Callaway, R. C. Anderson, M. O. Franco, J. E. Sawyer, and T. A. Wickersham. 2015. Effect of monensin withdrawal on intake and digestion in Bos indicus and Bos taurus steers consuming bermudagrass hay. J. Anim. Sci. 93 (Suppl. s3):124.

Bell, N. L., R. C. Anderson, T. R. Callaway, M. O. Franco, J. E. Sawyer, and T. A. Wickersham. 2015. Effect of monensin withdrawal on ruminal fermentation parameters in Bos indicus and Bos taurus steers consuming bermudagrass hay. J. Anim. Sci. 93 (Suppl. s3):869.

Franco, M. O., J. E. Sawyer, J. R. Baber, **N. L. Bell**, E. Detmann, and T. A. Wickersham. 2014. Differences in forage utilization between *Bos taurus* and *Bos inducus* steers fed low-quality forage and supplemented soybean meal. J. Anim. Sci. 92 (E-Suppl. 2):796.

Bell, N. L., R. C. Anderson, S. L. Murray, J. C. McCann, K. K. Weldon, and T. A. Wickersham. 2013. Effect of level and source of supplemental protein on rate of ruminal ammonia production and concentrations of amino acid-utilizing and trypticase-metabolizing bacteria in *Bos taurus* and *Bos indicus* steers fed low-quality forage. Congress on Gastrointestinal Function. 2013:26.

Bell, N. L., R. C. Anderson, S. L. Murray, J. C. McCann, K. K. Weldon, and T. A. Wickersham. 2013. Effect of level and source of supplemental protein on rate of ruminal ammonia production and concentrations of amino acid-utilizing and trypticase-metabolizing bacteria in *Bos taurus* and *Bos indicus* steers fed low-quality forage. Plains Nutrition Council Spring Conference. 2013:123.

Bell, N. L., R. C. Anderson, S. L. Murray, J. C. McCann, K. K. Weldon, A. D. G. Wright, J. E. Sawyer, and T. A. Wickersham. 2013. Effect of level and source of supplemental protein on rate of ruminal methane production and methanogen concentration in *Bos taurus* and *Bos indicus* steers fed low-quality forage. J. Anim. Sci. 91 (E-Suppl.):25.

Bell, N. L., T. A. Wickersham, and J. L. Young. 2013. Using near-infrared reflectance spectroscopy as a predictor of in vitro true digestibility of bahiagrass (*Paspalum notatum*). J. Anim. Sci. 91 (E-Suppl.):553.

INVITED PRESENTATIONS

Calibration and Validation using NIRS Software for Forage Testing of Warm-season Perennial Grasses
Audience: Texas Pasture and Forage Work Group
Location: College Station, TX
Date: 1/7/2013

SERVICE AND PROFESSIONAL DEVELOPMENT

RESEARCH SYMPOSIUM JUDGE

6th Annual Javelina Research Symposium
Location: Kingsville, TX
Date: April 15, 2015

GRANT PANEL

2015 USDA Grant Panel
Location: Confidential
Dates: Confidential, 2015

TRAINING

Traditional and Real-Time PCR
Location: University of Vermont, Burlington, Vermont
Dates: August 19-23, 2013

MENTORING

STEM (Science, Technology, Engineering, Mathematics) Mentor
Dates: 11/2013 – 1/2014
Responsibilities: Aiding and instructing high school student in forage evaluation for high school research competition. Responsible for teaching basic lab safety, instrument operation, forage evaluation protocol, and interpretation of results.

PROFESSIONAL ORGANIZATIONS

Texas and Southwest Cattle Raisers Association
Member since 2010

American Society of Animal Science
Member since 2011

National Cattlemen's Beef Association
Member since 2011

PROFESSIONAL DEVELOPMENT CONFERENCES

2015 ASAS-ADSA Joint Annual Meeting
Location: Orlando, FL
Dates: July 12-16, 2015

2014 11th Annual Holt Cat Symposium on Excellence in Ranch Management
Sustainability: What it Means to the Beef Industry and Your Future
Location: Kingsville, TX
Dates: October 23-24, 2014

2014 Kenneth and Caroline McDonald Eng Foundation Symposium: Innovative intensification in cow-calf systems
Location: San Antonio, TX
Dates: September 18-19, 2014

2014 Northwest Oklahoma Beef Conference
Location: Enid, Ok
Date: August 14, 2014

2014 ASAS-ADSA-CSAS Joint Annual Meeting
Location: Kansas City, MO
Dates: July 20-24, 2014

2013 Congress on Gastrointestinal Function
Location: Chicago, IL
Dates: April 15-17, 2013

2013 Plains Nutrition Council Meeting
Location: San Antonio, TX
Dates: April 18-19, 2013

2013 ASAS-ADSA Joint Annual Meeting
Location: Indianapolis, IN
Dates: July 8-12, 2013