

IOWA STATE UNIVERSITY

Agricultural and Biosystems Engineering

Brett C. Ramirez

Assistant Professor

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Education

Ph.D. Agricultural & Biosystems Engineering,
2017

Iowa State University

M.S. Agricultural & Biological Engineering,
2014

University of Illinois at Urbana-Champaign

B.S. Agricultural & Biological Engineering,
2012

University of Illinois at Urbana-Champaign

Honors and Awards

Graduate College Research Excellence Award
(2017)

Rev P.T. Taiganides Award: Outstanding ABE
Ph.D. Student Award (2017)

Top Honoree in Class of New Faces of ASABE
- Professionals (2017)

Henry Giese Memorial Scholarship Recipient
(2016)

ASABE - Iowa Section Outstanding Ph.D.
Student Award (2016)

Iowa State University Presidential Scholar
(2014)

Ben and Georgeann Jones ABE Graduate
Student Scholarship Recipient (2014)

Recent Publications

Mayorga, E. J., Renaudeau, D., **Ramirez, B. C.**, Ross, J. W., & Baumgard, L. H. (2019). Heat stress adaptations in pigs. *Animal Frontiers*.

Ramirez, B. C., Gao, Y., Hoff, S. J. & Harmon, J. D. (2018). Thermal environment sensor array: Part II. Data application to assess grow-finish swine housing. *Biosystems Engineering*, 174, 341-351.

Ramirez, B. C., Hoff, S. J. & Harmon, J. D. (2018). Thermal environment sensor array: Part I. Development and field performance assessment. *Biosystems Engineering*, 174, 329-340.

Ramirez, B. C., Gao, Y., Hoff, S. J. & Harmon, J. D. (2018). Functional performance evaluation of a novel thermal environment sensor array. *Transactions of ASABE*, 61(3).

Gao, Y., **Ramirez, B. C.**, & Hoff, S. J. (2016). Omnidirectional thermal anemometer for low airspeed and multi-point measurement applications. *Computers and Electronics in Agriculture*, 124, 439-450.

Ramirez, B. C., Hoff, S. J., & Tong, L. (2016). Design and feasibility of an impact based odor control system. *Applied Engineering in Agriculture*, 32(4).

Research and Extension

Dr. Ramirez's research and extension program encompass swine and poultry production systems with a primary focus on:

- ventilation systems,
- natural resource and energy efficiency,
- animal energetics,
- environmental control, and
- precision livestock farming.

The mission is to provide and advance the science and technology needed to address the aforementioned areas in animal production systems. Through mentoring undergraduate and graduate students on fundamental and applied research projects, his program further aims to generate practical solutions to current and emerging issues surrounding animal agriculture and its producers. Seamless integration of research and extension/outreach expands both the national and global visibility of ABE at ISU.



Current Research Projects

Dr. Ramirez's research group is working on the following projects:

- low-cost open-source electronic platforms for monitoring animal physiological, behavioral, and productivity responses
- spatiotemporal thermal environment and air quality quantification to improve ventilation system design and operation
- technical evaluation of new methods for reducing energy consumption
- improvement of a novel creep area heating method to improve piglet productivity and reduce pre-wean mortality
- characterizing dynamic and 3D spatial space needs for sows
- effect of farrowing stall and creep area dimensions plus effect of one or two heat lamps on sow comfort and piglet productivity
- autonomous robot for quickly performing 3D traverses to collect spatiotemporal data
- application of machine learning techniques to improve ventilation controller settings and operational characteristics

Other Professional Interests

Dr. Ramirez is an active member of the American Society for Agricultural and Biological Engineers (ASABE) and has served as an officer for the facility and housing committee (PAFS-40) and helped organized the ASABE International Livestock Environment Symposia (ILES).

Dr. Ramirez also actively engages in international collaborations with leading disciplinary scientists and engineers in Europe, China, and South America.

Further Information

[ABE Profile](#)

[Selected Works](#)

[ORCID](#)

[ResearcherID](#)

[Google Scholar](#)