

SUBJECT: SPECIAL ISSUE ON RURAL CONSTRUCTION

Brazilian Journal of Agricultural and Environmental Engineering

SPECIAL ISSUE

Precision Tools Applied to Rural Buildings and Environmental Comfort: Advances in Precision Livestock Farming and Intelligent Monitoring of Rural Structures

The Brazilian Journal of Agricultural and Environmental Engineering (AGRIAMBI) announce the call for submissions for a Special Issue dedicated to Precision Tools Applied to Rural Buildings and Environmental Comfort, with emphasis on Precision Livestock Farming (PLF), Intelligent Monitoring Technologies, and Advanced Environmental Control Systems.

Over recent decades, the sustainable intensification of agri-food systems has demanded increasingly integrated engineering solutions capable of reconciling productivity, animal welfare, energy efficiency, and the mitigation of environmental impacts. In this context, Rural Buildings and Environmental Comfort have assumed a central role, particularly when integrated with digital technologies, smart sensors, embedded systems, and advanced data analytics.

PLF has emerged as one of the leading technological paradigms in engineering applied to rural systems, enabling continuous and individualized monitoring of animals and the production environment. The use of thermal, gas, acoustic, light, imaging, and behavioral sensors, integrated with microcontrollers, automation systems, the Internet of Things (IoT), and Big Data and Machine Learning analytics, has enabled significant advances in environmental control, animal welfare assessment, production efficiency, and real-time decision-making. Beyond applications directly related to animals, these tools have been widely employed in the structural health monitoring of rural facilities, including the assessment of pressures and flow dynamics in silos and storage buildings, the structural integrity of reinforced concrete, steel, and timber structures, the early detection of construction pathologies, the thermal performance of rural buildings, and the efficiency of natural and mechanically ventilated systems.

This Special Issue aims to bring together high-quality scientific contributions addressing the development, validation, and application of precision tools and digital technologies focused on Rural Buildings and Environmental Comfort, fostering an integrated perspective that bridges engineering, automation, data science, and sustainable agricultural production.

AGRIAMBI invites researchers, academics, and professionals in the field to submit original research articles and unpublished review papers presenting conceptual, methodological, or applied advances related to, but not limited to, the following topics:

- 1) Precision Livestock Farming (PLF) applied to animal production systems;
- 2) Precise environmental monitoring and control in animal housing facilities (thermal, gaseous, acoustic, lighting, and air quality parameters);
- 3) Smart sensing and embedded systems in rural buildings;
- 4) Internet of Things (IoT) and wireless sensor networks applied to rural environments;
- 5) Big Data analytics, artificial intelligence, and Machine Learning applied to animal environmental management;
- 6) Automation and control of ventilation, cooling, and heating systems;
- 7) Animal welfare assessment based on environmental and behavioral data;
- 8) Intelligent structural monitoring of silos, warehouses, and other rural facilities;
- 9) Structural pathologies and durability of rural structures monitored through sensor-based systems;
- 10) Energy efficiency and sustainability in smart rural buildings.

Manuscripts for this Special Issue must be submitted between August 1 and August 31, 2026. Submissions must be made exclusively through the SciELO submission system, available at <https://submission.scielo.br/index.php/rbeaa/login>. All manuscripts must strictly comply with the Author

Guidelines of the AGRIAMBI journal, available at <https://www.agriambi.com.br/en/instrucoes-ingles.pdf>. To properly identify submissions intended for this Special Issue, authors must include the following text in the Word file of the manuscript, before the title: “SPECIAL ISSUE: PRECISION AGRICULTURE TOOLS APPLIED TO RURAL BUILDINGS AND ENVIRONMENTAL COMFORT”. All submitted manuscripts selected for editorial processing will be evaluated under the same scientific rigor and editorial procedures adopted by AGRIAMBI, ensuring the quality, originality, and relevance of the published contributions. The Special Issue is scheduled for publication in May 2027.

We sincerely acknowledge and appreciate the contributions of researchers and anticipate that this Special Issue will become a scientific reference in the fields of Rural Buildings, Environmental Comfort, and Precision Livestock Farming, fostering knowledge advancement and the development of innovative engineering technologies for rural areas, as well as enriching the state of the art in these topics for the development of future research.

Academic Regards,

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Guest Editors