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PROCAV: TECHNICAL TRAINING AND EXTENSION STRATEGIES TO IMPROVE POULTRY PRODUCTION, NUTRITION AND HEALTH IN BAIXADA FLUMINENSE

PROCAV: CAPACITAÇÃO TÉCNICA E ESTRATÉGIAS EXTENSIONISTAS PARA A MELHORIA DA PRODUÇÃO, NUTRIÇÃO E SANIDADE DE AVES NA BAIXADA FLUMINENSE

PROCAV: CAPACITACIÓN TÉCNICA Y ESTRATEGIAS DE EXTENSIÓN PARA LA MEJORA DE LA PRODUCCIÓN, NUTRICIÓN Y SANIDAD AVÍCOLA EN LA BAIXADA FLUMINENSE

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Abstract: Poultry production in the Baixada Fluminense region faces challenges related to inadequate management and nutrition, biosecurity failures, animal welfare issues, and the occurrence of diseases, factors that compromise productive performance and increase production costs. In this context, extension activities that integrate technical training, prescriptive and observational farm diagnosis, and continuous follow-up of producers become strategic for strengthening regional poultry production. The objective of the project "Technical Support and Training for Small-Scale Poultry Producers" (PROCAV) was to promote improvements in management, nutrition, health, and biosecurity practices, contributing to animal welfare, productive sustainability, and the reduction of economic losses in the Baixada Fluminense. Initiated in September 2025, the project involved technical visits for prescriptive and observational diagnosis of poultry farms, as well as lectures and training courses addressing topics such as respiratory diseases, nutrition, management, and animal welfare. The initial actions included two technical visits and three lectures conducted in municipalities of the region, with the participation of approximately twenty small-scale producers. Recurrent challenges were identified, particularly those related to management failures and nutritional deficiencies. To date, seven producers have been registered for individualized technical follow-up. It is concluded that PROCAV achieved its proposed objectives by integrating technical training, periodic farm visits, and monitoring of identified non-conformities, promoting improvements in production systems. In addition, the project contributed to the practical training of students in the poultry area, reinforcing the role of university extension in regional development.

Keywords: biosecurity, poultry management, university extension, family farming, sustainability.

Resumo: A avicultura na Baixada Fluminense enfrenta desafios relacionados ao manejo e à nutrição inadequados, falhas de biosseguridade, problemas de bem-estar animal e ocorrência de enfermidades, fatores que comprometem o desempenho produtivo das aves e elevam os custos

de produção. Nesse contexto, ações extensionistas que integrem capacitação técnica, diagnóstico presuntivo das propriedades e acompanhamento contínuo dos produtores tornam-se estratégicas para o fortalecimento da produção avícola regional. O objetivo do projeto "Apoio Técnico e Capacitação para Pequenos Produtores na Avicultura" (PROCAV) foi promover melhorias no manejo, na nutrição, na sanidade e nas práticas de biosseguridade, contribuindo para o bem-estar das aves, a sustentabilidade produtiva e a redução de perdas econômicas na Baixada Fluminense. Iniciado em setembro de 2025, o projeto envolveu visitas técnicas para diagnóstico presuntivo e observacional das propriedades, além da realização de palestras e cursos de capacitação abordando temas como doenças respiratórias, nutrição, manejo e bem-estar animal. As ações iniciais incluíram duas visitas técnicas e três palestras realizadas em municípios da região, com a participação de aproximadamente vinte pequenos produtores. Foram identificados desafios recorrentes, especialmente relacionados a falhas de manejo e deficiências nutricionais. Até o momento, sete produtores foram cadastrados para acompanhamento técnico individualizado. Conclui-se que o PROCAV atendeu ao objetivo proposto ao integrar capacitação técnica, visitas periódicas às propriedades e acompanhamento das não conformidades identificadas, promovendo melhorias nos sistemas produtivos. Adicionalmente, o projeto contribuiu para a formação prática de estudantes na área da avicultura, reforçando o papel da extensão universitária no desenvolvimento regional.
Palavras-chave: biosseguridade, manejo avícola, extensão universitária, produção familiar, sustentabilidade.

Resumen: La producción avícola en la Baixada Fluminense enfrenta desafíos relacionados con un manejo y una nutrición inadecuados, fallas en la bioseguridad, problemas de bienestar animal y la ocurrencia de enfermedades, factores que comprometen el desempeño productivo de las aves y aumentan los costos de producción. En este contexto, las acciones de extensión que integran capacitación técnica, diagnóstico presuntivo y observacional de las propiedades y el acompañamiento continuo de los productores se vuelven estratégicas para el fortalecimiento de la producción avícola regional. El objetivo del proyecto "Apoyo Técnico y Capacitación para Pequeños Productores Avícolas" (PROCAV) fue promover mejoras en el manejo, la nutrición, la sanidad y las prácticas de bioseguridad, contribuyendo al bienestar animal, la sostenibilidad productiva y la reducción de pérdidas económicas en la Baixada Fluminense. Iniciado en septiembre de 2025, el proyecto incluyó visitas técnicas para diagnóstico presuntivo y observacional de las explotaciones, además de la realización de charlas y cursos de capacitación sobre temas como enfermedades respiratorias, nutrición, manejo y bienestar animal. Las

acciones iniciales comprendieron dos visitas técnicas y tres charlas realizadas en municipios de la región, con la participación de aproximadamente veinte pequeños productores. Se identificaron desafíos recurrentes, especialmente relacionados con fallas en el manejo y deficiencias nutricionales. Hasta el momento, siete productores fueron registrados para el acompañamiento técnico individualizado. Se concluye que el PROCAV cumplió con su objetivo al integrar capacitación técnica, visitas periódicas a las propiedades y el seguimiento de las no conformidades identificadas, promoviendo mejoras en los sistemas productivos. Adicionalmente, el proyecto contribuyó a la formación práctica de estudiantes en el área de la avicultura, reforzando el papel de la extensión universitaria en el desarrollo regional.

Palabras clave: bioseguridad, manejo avícola, extensión universitaria, producción familiar, sostenibilidad.

INTRODUCTION

Poultry farming plays a strategic role in food security and income generation, especially in regions where production systems managed by small producers predominate (GERALDO et al., 2020). In addition to contributing to the local supply of high biological value animal protein, poultry farming has the potential to strengthen the regional economy and promote productive inclusion in peri-urban and rural areas.

In the Baixada Fluminense region, poultry production is largely characterized by small-scale systems, often developed in a family-run manner and with limited access to specialized technical assistance and technological updates. This reality favors the adoption of inadequate management practices, nutritional imbalances, and failures in biosecurity programs, resulting in zootechnical and sanitary losses (JUNGES & DE SOUZA, 2023). As a consequence, there is a reduction in productive performance, an increase in the occurrence of diseases, and a rise in production costs, factors that compromise the sustainability of production systems.

In peri-urban regions, such as the Baixada Fluminense, small-scale poultry production takes on particular characteristics, marked by proximity to urbanized areas, high population density, and frequent circulation of people and animals. This context increases the sanitary vulnerability of production systems, especially when associated with the absence of basic biosecurity practices, creating a risk scenario for both animal and public health. Thus, extension activities beyond presumptive diagnosis, preventive guidance, and technical training assume a strategic role in mitigating sanitary risks and strengthening passive epidemiological

surveillance at the local level.

Health problems, including special respiratory diseases and metabolic disorders, associated with environmental and management conditions, directly compromise the welfare of birds and the flock production efficiency (MEIRELES et al., 2025). Furthermore, the lack of continuous technical guidance hinders the adoption of sustainable and low-cost practices capable of improving the productivity, health, and profitability of poultry production, especially in systems run by small producers.

In this scenario, university extension emerges as a fundamental tool for the transfer of scientific and technological knowledge, promoting closer ties between the university and society and stimulating the development of solutions adapted to local realities (DE FARIAS et al., 2019). Extension projects focused on technical training and monitoring of producers enable the identification of production bottlenecks, the strengthening of management practices, nutrition, biosecurity and animal welfare, in addition to contributing to the academic and civic education of the students involved (DE ALMEIDA et al., 2022).

Therefore, integrated actions that combine property diagnosis, technical training, and continuous monitoring have high potential to promote improvements in regional poultry production, encouraging the adoption of more efficient, sustainable, and economically viable practices. Thus, the objective of the project "Technical Support and Training for Small Producers in Poultry Farming" (PROCAV) is to enhance health, management, nutrition, and biosecurity practices, contributing to avian welfare in the Baixada Fluminense region while strengthening productive sustainability and reducing economic losses.

METHODOLOGY

Location and execution period.

The project began on September 1, 2025, with a planned duration of twelve months, and was developed in municipalities of the Baixada Fluminense region, in the state of Rio de Janeiro. The actions were conducted by professors and students from the Federal Rural University of Rio de Janeiro (UFRRJ), within the scope of university extension activities, prioritizing small-scale poultry farms located in peri-urban and rural contexts.

Target audience.

The project's target audience consisted of small poultry producers from the Baixada Fluminense region, characterized by family-based or small-scale production systems with

limited access to specialized technical assistance. Additionally, the project included undergraduate students in Animal Science and Veterinary Medicine who participated in field actions, training sessions, and educational activities, contributing to their technical and extension-related training.

Extension activities.

The methodology adopted is based on a participatory, diagnostic and continuous approach, structured in three main axes: (i) technical diagnosis of poultry farms, (ii) technical training of producers and professionals in the area and (iii) individualized follow-up of registered producers (Figure 1).

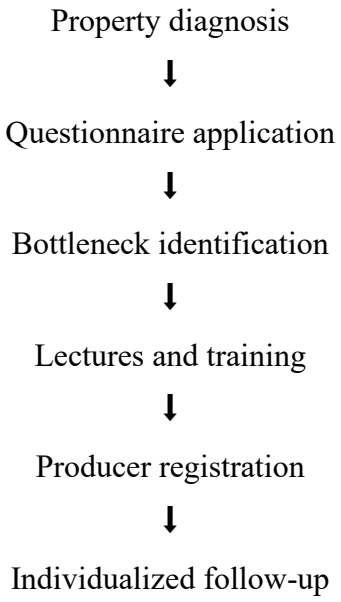

Figure 1. Flowchart of actions developed in the PROCAV project, involving diagnosis, training and technical monitoring of poultry producers in the Baixada Fluminense region.

Initially, the project was promoted to the local community through the creation of social media profiles, the development of informative graphic materials, and the distribution of pamphlets during lectures, meetings, and gatherings with rural producers (Figure 2). As an additional strategy for engagement and closer contact with the target audience, an institutional mascot for the PROCAV project was developed, with the aim of facilitating communication, encouraging producer participation, and strengthening the identity of the extension activity.



Figure 2. Graphic material promoting the extension project "Technical support and training for small producers in poultry farming", developed by the Federal Rural University of Rio de Janeiro (UFRRJ).

The technical visits to poultry farms aimed to identify the main risk factors related to management, nutrition, health, biosecurity, environment, and welfare of the birds. During these visits, a standardized semi-structured questionnaire, modified specifically for the PROCAV project, was applied, allowing for the systematic collection of productive, sanitary, structural, and socioeconomic information from the farms.

The instrument includes data identifying the property and the person responsible, characterization of the breeding system (type of production, management system, installed capacity and batch size), zootechnical information of the batch (species, lineage, age, sex, average weight, mortality, uniformity and egg production, when applicable), as well as the production history. Aspects related to animal health were also evaluated, including vaccination program, use of medications, occurrence of clinical signs, presence of ecto- and endoparasites, and access to veterinary support.

Additionally, the form addressed biosecurity and hygiene practices, such as access control to facilities, visitor management, use of footbaths, cleaning and downtime procedures, pest control, and disposal of dead birds. Information was also collected on the physical structure

and management of the sheds, environmental conditions (ventilation, heating, lighting, density, bedding, and environmental monitoring), as well as nutritional data, including type of feed, consumption, feed storage, water quality, and supplementation.

The questionnaire also included aspects related to marketing, production management, the activity's contribution to family income, interest in training, and producers' perception of the consumption and appreciation of poultry products. At the end of the visit, each property received a qualitative evaluation through a scoring system, called a "thermometer," which allowed the producer to visualize their initial condition in a simplified way and monitor the progress of technical improvements throughout the technical follow-up.

The training activities included lectures and courses covering topics considered priorities for the region, such as respiratory diseases in poultry, basic principles of biosecurity, nutritional management, environment, and animal welfare. The activities were conducted using accessible language, a practical approach, and active methodologies, prioritizing low-cost and easily adopted technologies compatible with the reality of small producers.

At the end of the group activities, registration forms were distributed to specific participants to receive ongoing technical support. Registered producers then began participating in individualized on-site visits focused on implementing specific strategies for sanitary control, management adjustments, improved poultry nutrition, and production optimization, taking into account the particularities of each property.

Throughout the process, participating students were encouraged to interact directly with producers, under the supervision of the responsible professors, acting as disseminators of technical knowledge and contributing to their own continuing education in the field of poultry farming. Periodic meetings of the PROCAV team were held to align actions, evaluate the progress of activities, and plan the subsequent stages of the project.

The effectiveness of the extension activities was evaluated qualitatively, considering the producers' adherence to the proposed activities, their interest in ongoing technical support, their participation in training sessions, and the evolution of the classification system applied during the technical visits. These indicators allowed for an integrated analysis of the reach of the actions and the producers' receptiveness to the technical recommendations, respecting the formative and not experimental nature of the project.

The data obtained through field research and semi-structured questionnaires were organized and analyzed in a descriptive and qualitative manner. The information was systematized, allowing for the identification and categorization of the main challenges related to poultry management, nutrition, biosecurity, and health. The results were interpreted in light

of the scientific literature, considering the extension nature of the project and the productive and socioeconomic reality of the producers served.

RESULTS AND DISCUSSION

The initial actions of the project resulted in two technical visits and three lectures aimed at producers in the Baixada Fluminense region. The visits took place in the municipalities of Paracambi and Xerém, with an estimated audience of approximately twenty small producers, involving institutional presentations of the project and technical training activities. Conducting the activities in different municipalities allowed for a more comprehensive view of the regional production reality, highlighting common characteristics among the systems evaluated.

The management failures and nutritional deficiencies identified in the evaluated properties reflect a recurring pattern in small-scale poultry production systems in Brazil, where empirical knowledge predominates over the adoption of sound technical practices. Previous studies indicate that the absence of standardized management routines and balanced diets is directly associated with reduced productive performance and increased susceptibility to diseases, especially respiratory diseases (JONES et al., 2013; MRAMBA & MWANTAMBO, 2024). In this context, extension work plays a fundamental role in translating scientific knowledge into practical guidelines compatible with the socioeconomic reality of producers.

During these visits, housing conditions, feeding management, sanitary control procedures, environmental conditions, and animal welfare practices were evaluated using standardized observational criteria adapted to the reality of small-scale production systems. (Figure 3).



Figure 3. Technical assessment of management, nutrition, biosecurity, and animal welfare conditions on poultry farms in the Baixada Fluminense region.

During the technical visits, recurring challenges were identified, highlighting failures in poultry management, the absence of basic biosecurity programs, and nutritional deficiencies, factors directly associated with reduced productive performance and an increased occurrence of health problems (Table 1).

Table 1. Main challenges identified in poultry farms in the Baixada Fluminense region during the PROCAV project's technical visits.

Category	**Main problems identified**	**Qualitative frequency**
Management	Failures in daily management, lack of standardized routine.	High
Nutrition	Unbalanced diets, empirical use of ingredients	High
Biosecurity	Lack of access control and hygiene.	Moderate
Sanity	Occurrence of respiratory diseases	Moderate
Animal welfare	Limited environmental control and occasional overcrowding.	Low to moderate

These limitations are frequently observed in small-scale production systems, where the lack of continuous technical assistance compromises the adoption of appropriate practices (GERALDO et al., 2020).

It was also observed that many producers had empirical knowledge about poultry farming, but with technical gaps related to diet formulation, sanitary control, and the adoption of preventive biosecurity measures. This scenario reinforces the importance of continuous educational actions aimed at transferring simple and low-cost technologies capable of generating a direct impact on the productivity and health of flocks (ARAÚJO et al., 2020).

After the lectures, seven producers from the Paracambi and Duque de Caxias regions registered for individualized technical follow-up. This result demonstrates the producers' receptiveness to the proposed actions and their interest in adopting more efficient management, nutrition, and health practices. The initial adherence to the project indicates the viability of implementing the proposed actions and the potential for expanding the reach of extension activities.

The individualized follow-up phase will allow for the adaptation of technical recommendations to the particularities of each property, respecting the structural,

socioeconomic, and cultural aspects of the producers served. Personalized strategies tend to be more effective in adopting good management and biosecurity practices, especially in small-scale production systems (VILLA et al., 2025).

The integrated participation of producers, professionals in the field, and students from UFRRJ strengthened the university's role as a disseminator of knowledge, while also providing practical training to the students involved. Field experience contributes to the consolidation of theoretical learning and the development of students' technical and social skills, aligning teaching, research, and extension (FACCO et al., 2021).

In general, the approach adopted by the project, based on a combination of theoretical training, questionnaires, and field visits, proved adequate for identifying production bottlenecks and proposing sustainable solutions adapted to local conditions. Preliminary results indicate that initiatives of this nature can significantly contribute to strengthening the regional poultry industry, promoting productive, sanitary, and economic improvements.

CONCLUSION

It is concluded that the integration of technical training and field visits presents high potential for strengthening poultry farming in the Baixada Fluminense region. The initial actions of the project showed good participation from producers and allowed the identification of priority challenges related to management, nutrition, biosecurity, and poultry welfare.

In this context, the PROCAV project underscores the role of university extension as a strategic instrument for promoting a more productive, sustainable, and economically viable regional poultry sector, contributing to the technical qualification of small producers, the improvement of production systems, and local development.

Beyond the technical advancements presented, the project contributed to strengthening the bond between the university and the community, stimulating the collective construction of knowledge and valuing ongoing technical assistance. The continuity and expansion of PROCAV's actions tend to enhance its impacts, consolidating it as a model of extension intervention applicable to other regions with similar productive characteristics.

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