BioSecure
Enhanced and cost-effective biosecurity in livestock production

ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

PRACTICE ABSTRACT # 44

A progressive pathway (PBP) to strengthen livestock biosecurity

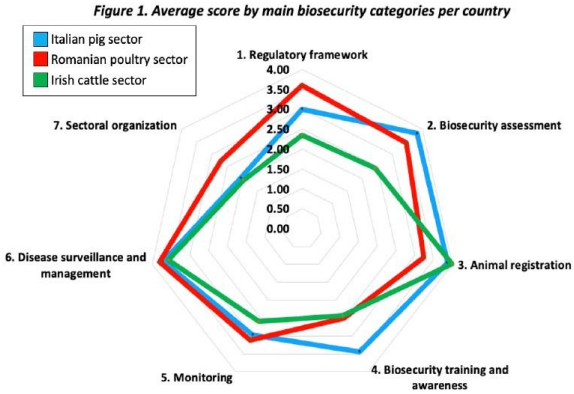
Effective biosecurity in livestock production depends not only on farm-level measures but also on robust institutional infrastructure and policy mechanisms at national and sectoral levels, including legislation, disease surveillance systems, training programs, data management frameworks, and coordinated governance.

The Progressive Biosecurity Pathway (PBP) is an analytical tool to assess the level of implementation and effectiveness of the farm biosecurity infrastructure within one country, region, or livestock sector. The PBP identifies 24 elements of the biosecurity infrastructure grouped into seven categories:

- **Regulatory framework**: Existence and enforcement of national biosecurity regulations across the livestock value chain.
- **Biosecurity assessment**: Tools, inspections, feedback mechanisms, and support systems to evaluate and improve biosecurity implementation.
- **Animal registration**: Systems for the identification, registration, and traceability of animals, holdings, and movements.
- **Biosecurity training and awareness**: Availability and dissemination of training, advisory services, and information on biosecurity practices.
- **Monitoring:** Collection and sharing of biosecurity-related data, research activities, and wildlife monitoring systems.
- **Disease surveillance and management**: Epidemiological surveillance and protocols for the prevention, detection, and control of animal diseases.
- **Sectoral organizations**: Sector-wide coordination and development of shared biosecurity guidelines and initiatives.

The evaluation is based on a participatory process including farmers, veterinarians, industry integrators, researchers, and animal health authorities. The PBP evaluation is structured into three phases.
In Phase 1, stakeholders assess the status of the infrastructure using a four-level scoring system (Figure 1). This evaluation identifies strengths, gaps, and critical constraints of animal disease prevention and control strategies.
In Phase 2, stakeholders establish intervention priorities and identify infrastructures requiring further development. These outcomes form the basis for the design of policy scenarios, which are translated into business models **in Phase 3**. This final phase supports the implementation of sustainable biosecurity improvements by promoting targeted investments and coordinated actions across the livestock value chain.
The PBP was applied in the Italian pig sector, the Romanian poultry sector, and the Irish cattle sector, demonstrating its adaptability to different production systems and contexts. The results highlight how a participatory and consensus-based process can support strategic planning, facilitate dialogue among stakeholders, and promote informed decision-making to strengthen animal health resilience and enhance the sustainability of livestock systems.

Figure 1. Average score by main biosecurity categories per country



- The Progressive Biosecurity Pathway (PBP) assesses national and sectoral biosecurity infrastructures in livestock systems.
- The framework evaluates 24 biosecurity infrastructures across seven key categories through a participatory approach.
- PBP identifies strengths, gaps, and priorities to support evidence-based biosecurity improvements.
- Application in pig, poultry, and cattle sectors demonstrated adaptability across diverse production systems and countries.
- Stakeholder-driven assessments facilitate strategic planning, coordinated action, and enhanced animal health resilience.

www.biosecure.eu

Funded by the European Union

Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the Research Executive Agency (REA). Neither the European Union nor REA can be held responsible for them.