INTEGRATED MANAGEMENT IN SHEEP PRODUCTION

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Abstract: *This paper presents the seven systems of an Integrated Management System (IMS) – "Quality Management System (QMS)," "Environmental Management System (EnvMS)," "Safety Management System (SMS)," "Energy Management System (EneMS)," "Food Safety Management System (FSMS)," "Compliance Management System (CMS)," "Information Security Management System (ISMS)" and investigates how it is implemented in sheep production aiming at intensifying production in this important sector of agriculture.*

Key words*: Integrated Management System, sheep production, implementation, intensification*

INTRODUCTION

Integrated Management System (IMS) integrates all the systems of an organization – "Quality Management System (QMS)," "Environmental Management System (EnvMS)," "Safety Management System (SMS)," "Energy Management System (EneMS)," "Food Safety Management System (FSMS)," "Compliance Management System (CMS)," "Information Security Management System (ISMS)" – into a complete framework (Figure 1):

- The Quality Management System (QMS): aims at improving effectiveness and efficiency, meeting customer and regulatory requirements, promoting continuous improvement, and reducing waste; documents, tracks, an manages quality-related procedures, processes, and responsibilities in an organization; has requirements specified by ISO 9001:2015.

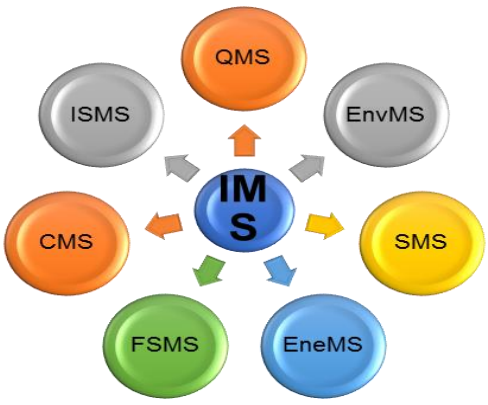

Figure 1. Components of an "Integrated Management System"

Source: [25]

- The Environmental Management System (EnvMS): can help eliminate or reduce negative environmental impacts associated with activities, products, and services; focuses on meeting the commitments exposed in the environmental policy of the organization; has as primary "customer" the local, regional, and global environment; has guidelines and requirements specified by ISO 14001; identifies key supporting processes covering

communication, employee competency, environmental performance monitoring, infrastructure provision, and legal compliance awareness; identifies significant environmental aspects and impacts, and defines outputs; is a standard following the plan-do-check-act model of continual improvement; relies on document control, internal auditing, and record management.

- Safety Management System (SMS): aims at "improving safety by building on existing processes, demonstrating corporate due diligence, and reinforcing an overall safety culture"; aims at systematically manage safety risks in daily operations; encompasses the procedures, processes, resources, responsibilities, and structure necessary to implement SMS; has four components (the Four Pillars): risk management (assessing risks, identifying hazards, and implementing controls), safety assurance (evaluating and monitoring safety performance), safety policy and objectives (establishing safety goals and defining responsibilities), and safety promotion (awareness, communication, training); is a structured and comprehensive process designed to manage safety risks effectively; is important in risk areas such as sheep breeding; provides an integrated and organized approach to safety management.

- Energy Management System (EneMS): has requirements specified by ISO 50001: continually improve energy management, defining and setting goals and objectives that meet the policy, defining and systematizing the use of data to help understand and make decisions about energy usage, developing and managing a policy for efficient energy use, measuring the results, and reviewing how well the policy works; is "a set of policies and procedures integrated and put into practice to track, analyse, and plan for energy usage; uses the popular Plan-Do-Check-Act method of continual process improvement."

- Food Safety Management System (FSMS): can be used by any organization in the food chain, no matter the size or position; ensures that food produced is safe to eat and meets quality standards; has four key elements: "Hazard Analysis and Critical Control Points (HACCP) principles, a systematic preventive approach to food safety"; interactive communication, necessary for the building of trust between consumers, distributors, and suppliers; prerequisite programmes, i.e., "basic conditions and activities necessary within an organization to maintain food safety"; system management (to ensure the effectiveness of the system), including customer focus, evidence-based decision-making, leadership, and process approach; has requirements specified by ISO 22000; is "a program designed to prevent food safety hazards from causing adverse health effects on consumers."

- Compliance Management System (CMS): aims at reducing compliance risk and ensure ongoing regulatory compliance; encompasses business processes, a collection of tools, and internal controls; has five key elements: automation (i.e., identifying potential risks and allowing real-time corrective action); compliance training (i.e., ensuring employees understand their responsibilities); data breach risk (resulting in business disruptions, fines, etc.); internal controls ((i.e., implementing checks and balances); risk assessments (i.e., identifying and evaluating compliance risks); has requirements specified by ISO 37301:2021: board of directors and management oversight, compliance audit (a periodic review of the effectiveness and performance of the CMS and the identification and resolution of issues or gaps), compliance program (a written document that establishes the expectations, policies, and procedures for fulfilling compliance requirements), reporting and documentation, training and education; is an integrated system used by organizations to meet regulatory requirements, internal policies, and industry standards;

- Information Security Management System (ISMS): has "requirements specified by ISO/IEC 27001"; has three components: data and technology, covering the protection of various types of data (customer data, financial information, intellectual property); employee behaviour and processes addressing not only data and technology but also

employee behaviour related to security; policies and procedures guiding how an organization handles its sensitive data; has two purposes and goals: is a structured framework that helps organizations systematically manage their sensitive data and protect it from unauthorized access, disclosure, or disruption; "minimizing risk and ensuring business continuity by proactively limiting the impact of security breaches"; providing a systematic approach to managing an organization's information security.

MATERIALS AND METHODS

The material used in this study consists in books and articles on seven components of an integrated management system in sheep breeding. The bibliographic research method used is aimed at showing the measure in which these seven components of an integrated management system are at work in sheep breeding – animal feeding, breeding practice, embryo production, emissions from sheep, food safety, herd management, sheep breeding, sheep production, sheep reproduction, etc.

RESEARCH RESULTS

Quality Management System (QMS) in sheep breeding considers the following: air quality [26], animal life quality [21], embryo quality [1], environmental quality [5], feed quality [10, 24], fodder quality [21], grazing quality [11], life quality [5], meadow quality [24], meat quality, milk quality, pasture quality, product quality [22], production quality, shade quality, sperm cell quality [21], sperm quality, water quality [25], and wool quality [7]; quality indicator, quality pastures, quality products, quality rams [7], quality spermatozoa, quality tools; as well as best quality oocyte, good quality pasture [10], good-quality grains, good-quality hay, good-quality semen, good-quality sperm [6], genetic quality [20], high-quality colostrum, low-quality colostrum, outstanding quality, poor quality, poor-quality grazing, superior quality. [9]

Environmental Management System (EnvMS) in sheep breeding focuses on the following: agricultural environment [4], anaerobic environment, chamber environment, controlled environment [22], environmental aspects [14, 15, 22], environmental challenge, environmental change, environmental characteristic, environmental concern, environmental condition, environmental constraint, environmental dynamics, environmental epidemiology [25], environmental factor, environmental hazard, environmental heat, environmental impact, environmental issue, environmental monitoring, environmental pollution, environmental quality [5, 12, 17], environmental responsibility, environmental risk, environmental stress, environmental stressor, environmental sustainability, environmental temperature [13, 24], environmental welfare; high-temperature environment, humid environments, machining environment, native environment [6], prevailing environment [20], production environment [19], tropical environment [3], and warm environment.

Safety Management System (SMS) in sheep breeding refers to: added safety [23]; lagoon safety, liquid storage safety, manure handling safety, pond safety; environmental epidemiology [25], hazard, pollution, risk; safety aspect, safety concern, safety device, safety equipment [16], safety hazards, safety issue, safety regulations, safety requirement and safety shield.

Energy Management System (EneMS) in sheep breeding concerns: energy consumption [8], energy efficiency, energy management, energy minimization, energy production [24], energy requirement and energy use.

Food Safety Management System (FSMS) in sheep breeding is concerned with biosafety [22] and food safety [5].

Compliance Management System (CMS) in sheep breeding is mentioned by a single author: compliance data [18, 23], compliance inspection, and regulatory compliance.

Information Security Management System (ISMS) is not present in sheep breeding literature.

CONCLUSIONS

The conclusions of the study are:

- The seven systems of an Integrated Management System presented are operational in many fields of activity among which agriculture and, implicitly, sheep breeding (animal feeding, breeding practice, embryo production, emissions from sheep, food safety, herd management, sheep breeding, sheep production, sheep reproduction, etc.);

- The distribution of the seven systems of an Integrated Management System is extremely uneven – QMS – 38 topics, EnvMS – 36 topics, SMS – 18 topics, EneMS – 7 topics, CMS – 3 topics, FSMS – 2 topics, and ISMS – no topic – but this speaks of itself of the importance given, in sheep breeding literature, to quality, environment, and safety.

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