

Presence of Microplastics in Livestock Production

**A Challenge for Animal Health and
Sustainability**

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Preface

The impact of the emissions of fossil fuel as well as biological, physical, chemical, non-degradable pollutants is a question of general interest for all the human beings and it influences the industry, agriculture, and livestock. Within this frame, the impact of microplastics on the terrestrial environment and the water body (both the open sea and inland waters) attracts considerable interest. Various investigations have shown their presence in oceans, and their effects on marine fauna, as well as their impact on agricultural systems, in animal health and productive sustainability. However, this issue has received less attention in recent years.

This work presents a series of basic research studies on microplastic pollution in various farming systems located in Guayas Province, Ecuador. The production segments studied were sheep, goats, pigs, horses, and feed for livestock.

Environmental factors affect the health and balance of ecosystems, the welfare of animals, and the sustainability of production methods. However, the specific properties of these variables that would allow for their adequate description remain unknown. The aim of this study was to estimate a baseline and quantify these environmental factors as an initial step to reduce or eliminate them.

Studies are needed to provide a baseline for a frame of reference to be used for comparison from which corrective action, mitigation, and technological applications can be determined. For this reason, the aim of the research is to identify microplastics as emerging relevant pollutants in animal husbandry. These materials are present in the water, food and living environment, and are harmful to the animal health and food safety.

The rationale of this study was based on the need to provide sound and technical guidelines for a preliminary evaluation of environmental risk in the rich agricultural frontiers of Province of Guayas.

The field trials thus generated invaluable data to guide the strategic decisions about the collection and dispatch of samples to the reference laboratories. It produced a set of useful observations that can be used to diagnose how microplastics get into and impact agroecosystems.

This study illustrates not only the prevalence of microplastics in our livestock systems, but also the urgent need for comprehensive detection methods. These baseline studies constitute an important scientific and technological contribution, providing essential tools for producers, researchers, and policymakers responsible for environmental sustainability.

Through its chapters, the present work intends to inform and stimulate more responsible action to improve aspects of the welfare of farmed animals and health of natural areas in the agricultural production region but also to reflect on the nature of the collective liability when it comes to the management of plastic waste that could lead to the reduction of this impact.

The authors present a situational diagnosis informed by scientific knowledge, highlighting the scope of this environmental issue in a specific sector of the Ecuadorian coast. This is how we leave for the generations to come a more responsible and fair future for our production environment.

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