

## “ONE HEALTH” APPROACH IN LIVESTOCK FARMING – A BRIEF OVERVIEW

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REVIEW, RESEARCH ARTICLE

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### Abstract

The concept that human, animal, and plant health are interdependent and linked to the health of the ecosystems in which they exist is described as "One Health" approach. Even if this idea has been known for more than a century, it is still in focus, by envision and put it into practice as a cooperative, entire society, entire government strategy to comprehend, foresee, and confront hazards to global health. The present study aims to highlight certain actions that should be addressed and that could bring significant improvements in animal farms, both ecologically and economically. We point out the use and the application of "One Health" concept in animal farms, by means of managing farm livestock resources, for improving the quality and safety of animal based products, ensuring and enhancing food security and storage, manure processing and other key aspects related to human, animal and environment, all together to achieve better integrated health outcomes.

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**Keywords:** One Health; farm animal resources; zoonotic diseases; animal farming; environment.

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### INTRODUCTION

Health care is the most important factor in life, nowadays raising an increasingly issue. The entire planet needs a restructuring, involving also the social sector, in terms of the environment (Pereno and Eriksson, 2020). The well-being, functionality and beauty of the planet attain the highest level when its three main pylons, i.e. human, animal and environmental sectors, work all together and corroborate with the prime benefit of the planet (Bertoni, 2021).

“One Health” stands for a collaborative and transdisciplinary strategy of multiple sectors acting at local, regional, national, and global levels. “One Health” is aiming to achieve optimal health outcomes, meanwhile acknowledging the interdependence between people, animals, plants and their shared environment. Thus, the “One Health” paradigm can be used to identify and manage health risks as well as positively model the coexistence, sustainability, and well-being of various interrelated systems (Rabinowitz et al., 2018; CDC, 2023).

The concerns related to the animal breeding sector are of particular importance

being stated by many authors as a wicked subject, that encompasses complex aspects of nature, and decisions related to animal health; besides it shows a large political weight (Waltner-Toews, 2017). Animal welfare science and animal welfare policy-making need to develop new methods to address global discussions about food security and sustainability as farm animal welfare becomes an increasingly significant part of modern global livestock production (Buller et al., .2018).

The Organization for Animal Health (OIE) refers animal wellbeing in terms of the conditions in which the animal lives, taking into account several factors. Thereby, when an animal is healthy, comfortable, well-nourished, safe, and not experiencing negative emotions like pain, fear, or distress, it able to express its natural behavior i.e has a good state of wellbeing. (WOAH, 2016; Buller et al., .2018; Faunalytics, 2023.)

Zoonoses are described as diseases or infections naturally transmitted from animals to humans. Moreover, they are considered one of the greatest threats to public health, resulting primarily by the complex relationship between humans, animals and the environment (EMRO, WHO, 2023).

Around 60% of human infectious diseases that are currently found in humans are zoonotic, and 75% of the emerging infectious diseases, including Ebola, HIV, influenza, COVID-19 have animal origin. Managing zoonotic pathogens at their animal's source is the most effective and cost-effective method of protecting people. (ECDC, 2022; EFSA, 2023).

The data retrieved from relevant bibliographic sources is in attempt to point out specific actions that should be addressed for gaining significant improvements in animal farms, both ecologically and economically, by the use and the application of "One Health" concept in animal farms.

### MATERIAL AND METHOD

The available published literature, case studies, and various data from public entities, official reports, scientific papers, and websites were analyzed in this study. Data retrieved and presented in this study highlight key information, on the importance of maintaining efficiency and cleaning on farms to ensure quality products and reduce pollution, by analyzing the fluctuations in zoonoses impacting health.

The sources considered had the most up-to-date information, enabling a variety of important insights on the targeted topics. Beside, all data referenced was used to support our interpretations, which are discussed below.

## RESULTS AND DISCUSSIONS

### Zoonoses

Zoonoses, which are contagious diseases or infections that are transmitted from animals to humans, represent one of the greatest threats to public health, their causality being due to the complex relationship between humans, animals and environment.

The reported status of three major zoonoses, that are the most common in the world were selected to be presented and analysed.

Also, it should be taken into account that in 2019 the COVID pandemic began, which lasted until the beginning of 2021. Because of this, people who had contact with animals were significantly fewer. Thus, people also bought and consumed a smaller amount of food, which led to a smaller spread of the bacteria present in the products. In the first table a significant decrease in the number of campylobacter cases in 2021 compared to 2017 in humans can be observed, meanwhile animals showed periods of fluctuation, but there is still recorded a significant number of cases (Figure 1). Salmonellosis was the second most commonly reported foodborne gastrointestinal infection in humans after campylobacteriosis, but the number of cases started to increase. (Figure 2). Moreover, most of the samples were recorded in chickens and turkeys (Figure 3). Despite all these, Romania has a good standing in terms of the number of brucellosis cases that have been confirmed (Figure 4).

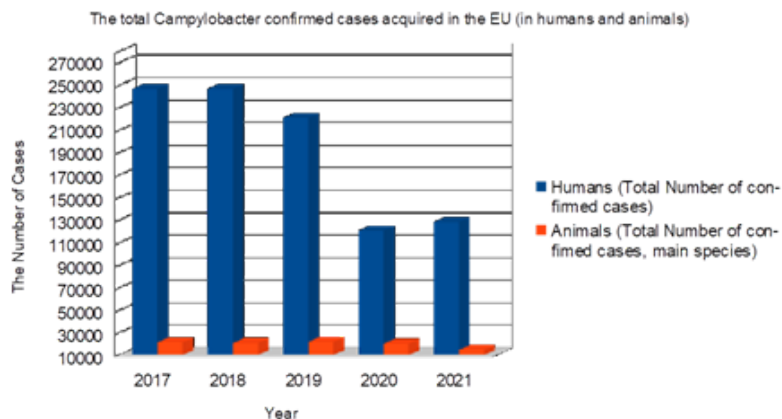


Figure 1 Confirmed cases of Campylobacter in humans and animals (in EU) (adapted from ECDC, 2022)

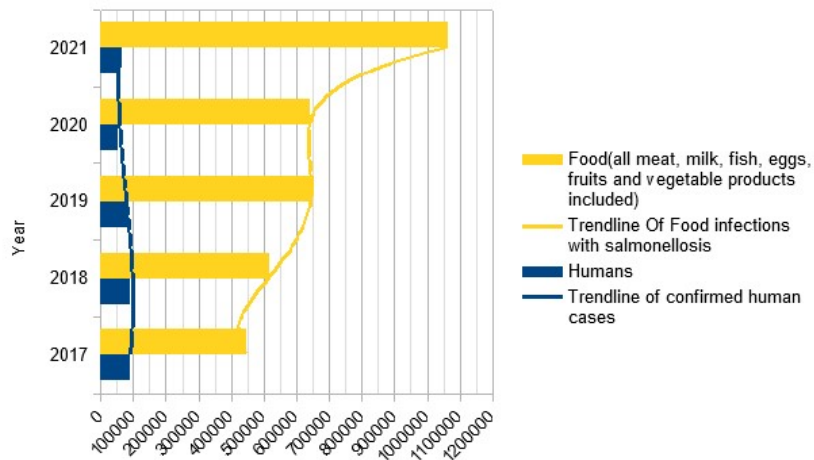


Figure.2 Confirmed cases of Salmonellosis (in EU) (adapted from ECDC, 2022)

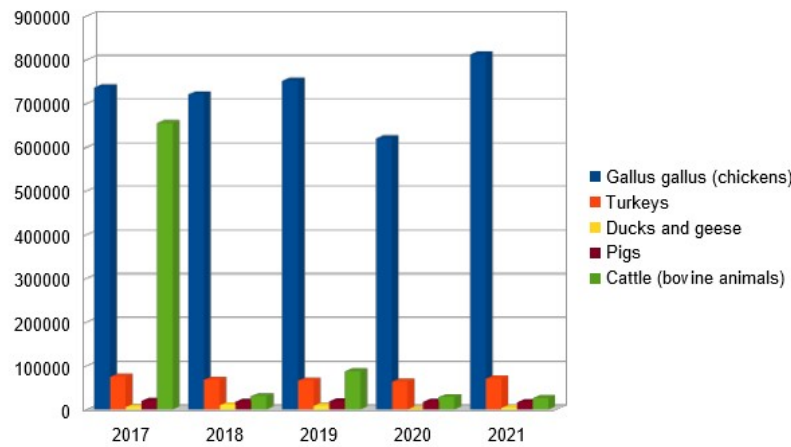


Figure 3 Cases of Salmonellosis in various species (adapted from ECDC, 2022)

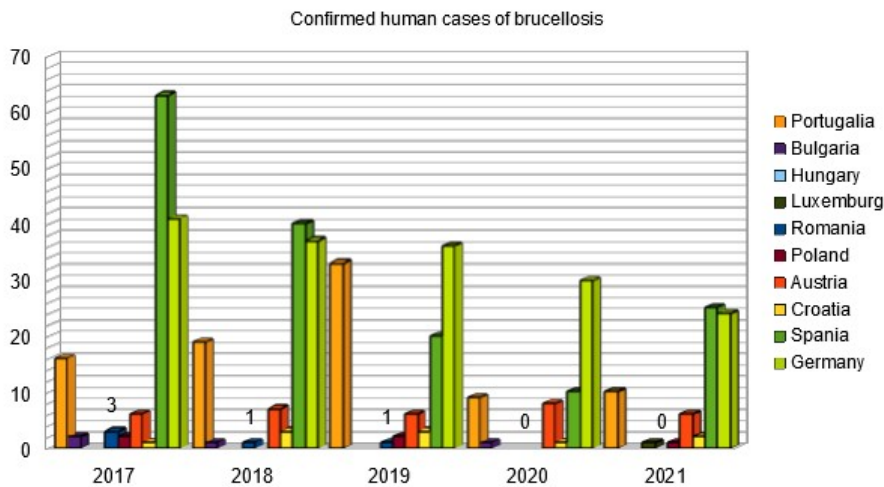


Figure 4 Confirmed human cases of brucellosis in various countries (adapted from ECDC, 2022)

*“One Health” valences for animal farms*

The main “One Health” strategic actions referring to farm animals are related to the control antibiotic use, the reduction of human

diseases, the ensuring animal health and welfare, an adequate animal-environment management system, food security. The control antibiotic use in farm animals aims to reduce

the risk of spreading antibiotic resistance (Velazquez-Meza, 2022). On the other hand, the reduction of human diseases could be achieved by ensuring a rigorous prevention and control of animal-borne diseases in humans for ensuring life and quality of life. Animal health and welfare consists in the care of farm animals addressed to improve animal, human, environmental and economic health. An adequate animal-environment management system could lead to a favorable impact on humans, animals and environment (World Bank Group and FAO, 2023).

Moreover, healthier and safer animal products for humans, which are produced in a healthier environment are the key point for ensuring food security.

All these actions presented could drive to favorable outcomes by assuring a collaboration between sectors, meaning joint actions and multisector investments for decreasing the risk of occurrence and spread of diseases in humans, animals and ecosystems.

The application of the "One Health" concept in livestock farms may be done by means of animal resources management and farm management for improving the quality and safety of products of animal origin, ensuring and improving food security, storage and processing of manure, and other key issues in relation to man, animals and the environment. All these together converge towards an integrated system and global health (Figure 5).

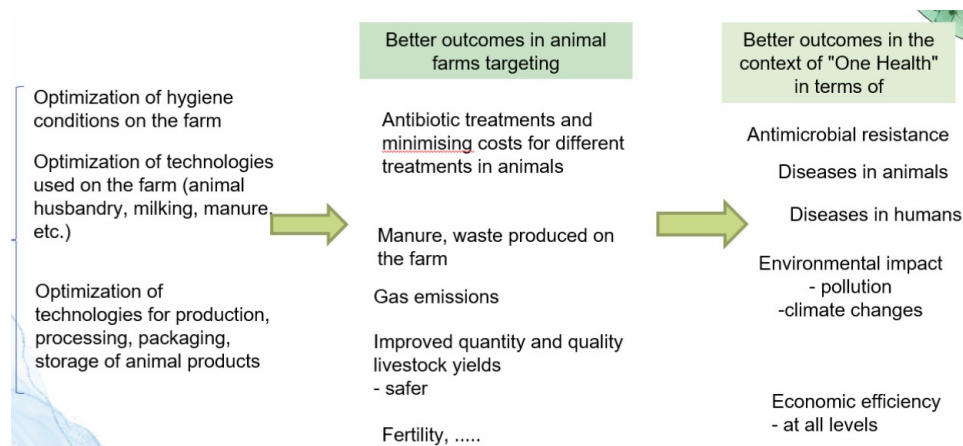


Figure 5 "One Health" concept in animal farms (adapted from Why Livestock Matter, 2023)

Following the presented improvements in the "One Health" concept implementation in Romania could be also achieved. By farms endowment modernizing so that the direct contact within animals and man is limited as possible. Beside production process hermetisation would lead to a small number of microbes transmitted. Ideally, the entire action on the farm should be coordinated by one person, a livestock engineer based on its highly specialization in this area, that could drive to a better coordination of the entire farm activity. Another advance would be the implementation of a production line, as a closed line in terms of raw material up to the final product, this facilitating an easier selling of the product in a closed environment, In our country, this concept of farm modernization is still not easily accepted beyond farmers, mostly based on their

prejudices and lower technological knowledge required.

## CONCLUSIONS

The application of "One Health" concept is essential for the well-being of environment and the world, and it is in line with modern animal farms. The best way to address complex health issues involving humans, farm animals, and environment is through integrated "One Health" investments and policies that incorporate and apply multi-sector knowledge in medicine, veterinary medicine, and ecosystems. Thereby, when livestock is healthy, people are healthier and safer; therefore, we must identify animal diseases early and successfully control them before they spread in humans. Investments and strategies that take into account how ecosystem conservation and livestock management must coexist for the advantage of improved human, animal, and

environmental health, may make the difference. The implementation of the "One Health" concept on Romanian farms could bring considerable improvements and benefits through their contribution to ensuring global health.

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