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## **NEW ECOLOGICAL MANAGEMENT MODELS IN QUANTITATIVE AND QUALITATIVE PRODUCTION IN SHEEP**

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**Abstract:** Due to the high demand on the market of ecological products obtained from sheep exploited in different production systems, it was found that the zootechnical sector is responsible for 13.00% of global greenhouse gas emissions, 15.05% of the total use of groundwater, and 12.60% of water pollution. The quantification of the impact of obtaining the quantitative products from the zootechnical sector, in particular, and of the growth and exploitation of sheep, in particular, has considerable effects on the biodiversity of meadow ecosystems and plant resources and have equal shares of the impact of land conversion into pastures and cultivated lands to produce green mass and hay for sheep feed. Given these desiderata, it is necessary to diversify the methods of obtaining quantitative and qualitative productions from the sheep, an important role being that of the management models according to the degree of land availability, avoiding environmental risks for sustainable development. The purpose of the research involves to find viable solutions in predicting the quantitative and qualitative productions obtained from sheep, by proposing for implementation new ecological management models that would contribute to obtaining large quantitative and quality productions by increasing individual productions through nutritional stimulation and not by increasing the number of sheep exploited per unit area, reducing the environmental impact of sheep production, efficiently managing water reserves, preserving biodiversity, reducing greenhouse gas emissions and increasing the responsibility of "environmental" departments by monitoring natural environmental factors and the impact of resource use depending on the season.

### • Introduction

To find solutions that contribute to the development of the most efficient management models of organic production in sheep exploited in intensive systems, it is recommended:

- to reduce the impact of organic sheep exploitation on the efficient use of farm land;
- to improve management by reducing the direct impact of sheep on meadows and land as well as the natural environment;
- to develop management models for the indirect impact of animals on land use through feed trade;
- to reduce direct emissions – without feed or land – of greenhouse gases produced by sheep;
- to reduce synergies between humans and animals in grain consumption by using local resources with a high cellulose content.

Appropriate management strategies in sheep farming include controlled burning of affected areas, weed control, stocking rate and grazing system, because grazing systems affect:

- pasture biodiversity;
- botanical composition of pastures;
- soil density;
- water infiltration into the soil;
- vegetative mass production of pastures.

### • Material and method

Because policies to manage the effects of quantitative and qualitative organic production on the environment should take into account both the resources available on the farm, the local consumption context, and the transnational impact, especially when concentrated feed for sheep feeding is important. Due to the magnitude of these impacts on production depending on the context – agro-ecological zone – and the type of agriculture, to reduce the impact on the biodiversity of the agricultural and cereal ecosystems in the farm area, within this scientific approach using known methods and research published by specialists in the field, the authors have developed several models of quantitative and qualitative production systems that reduce the impact of ecological exploitation on greenhouse gas emissions, on the environment, and on the communities in the sheep farm area, contributing to the efficient management of water reserves, reducing soil compaction, and preserving the biodiversity of ecosystems.

### • Results and discussion

Quantifying the impact of the livestock sector on biodiversity is more difficult, but equal shares of the impact of land conversion into pastures and cultivated land have been associated, but their magnitude varies depending on:

- agro-ecological zone;
- type of farming system;
- classical or organic production system.

Management policies implemented to reduce the effects of livestock production on the environment should take into account the economic power of farms, the exploitation system implemented, the local context, and the impact on the national or transnational area, when production is obtained using feed from sources other than local ones.

To reduce the environmental impact of production obtained from sheep, the authors propose for implementation an ecological management model of exploitation through which to efficiently manage food resources, water and maintain the biodiversity of ecosystems in the area of sheep farms. This ecological management model seeks to reduce greenhouse gas emissions and increase the responsibility of "environmental" departments by reducing:

1. the impact of sheep on land use;
2. the management of the direct impact of sheep on the land and the environment;
3. the management of the indirect impact of livestock on land use through feed trade;
4. the reduction of direct emissions (without feed or land) of greenhouse gases produced by sheep;
5. the synergies between humans and animals in cereal consumption.

### • Conclusions

Management of the indirect impact of sheep on land use through feed trade concerns the use of diets with relatively high nutrient density in organic production, as well as the use in intensive organic systems of resources rich in metabolizable energy and protein in small quantities to increase feed efficiency and reduce methane emissions. Production management models can contribute to the mitigation of emissions through ecological management actions by implementing mitigation solutions by controlling the demand for organic products in the areas of influence of farms, good production practices and orientation of consumption towards other protein sources that do not have major environmental pollution effects.