

Assessment of sustainability of extensive livestock farming in Central Greece (Evrytania prefecture) using S.W.O.T Analysis

Bakogiorgos G.¹, Lappa V.², Tasios A.³, Papadopoulos A.⁴, Pantera A.⁵

¹PhD Student, Department of Forestry and Natural Environment Management, Agricultural University of Athens, Karpenisi

²PhD Student, Department of Forestry and Natural Environment Management, Agricultural University of Athens, Karpenisi

³PhD, Department of Forestry and Natural Environment Management, Agricultural University of Athens, Karpenisi

⁴Professor, Department of Forestry and Natural Environment Management, Agricultural University of Athens, Karpenisi

⁵Professor, Department of Forestry and Natural Environment Management, Agricultural University of Athens, Karpenisi

*corresponding author:

E-mail: gback@aua.gr

Abstract

Animal husbandry, both in Greece and worldwide, is under constant threat, being at the center of multiple crises: wars, droughts, pandemics, successive economic crises. The increase in the prices of livestock inputs, especially after 2020, has tested and highlighted the strengths of the various livestock systems, bringing to the fore the need to make political decisions and choices, in the direction of the production of sufficient and quality products and also for the benefit of the producers and the development of the regional economy. For this purpose, we utilize the S.W.O.T analysis (Strengths, Weakness, Opportunities, Threats) focusing on the prefecture of Evrytania in Central Greece.

Keywords: livestock, extensive farming, SWOT analysis

1. Introduction

The SWOT analysis is a method of analysis and organization in the context of a development plan that includes specific interventions. In the SWOT analysis, four main groups of factors are taken into account and evaluated: Strengths (S), Weaknesses (W), Opportunities (O), Threats (T) due to various factors -environmental, historical, economic- (Vagianni et al., 2003). The SWOT analysis, in the past, was mainly referred to the private sector. Today it is used mainly in development planning actions.

The SWOT analysis for extensive mountain livestock farming is feasible. The aim is, on a second level, to look for the appropriate accelerating policies for the further development of the Strong Points and the recognition of opportunities. In addition, Structural policies can be designed to deal with internal Weaknesses as well as preventive policies to deal with threats. The ultimate goal is to improve the economic viability of farms without burden and if possible with a positive effect on the ecosystem. The SWOT analysis must focus each time on a specific area, since the same factors are not present everywhere. The sustainability of extensive farming in an area with a long grazing season, with high pasture

production and pastures free of predators is different compared to extensive farming in mountainous areas with a short grazing season, poor pastures and a strong presence of predators.

Table 1. Strengths of the extensive livestock farming

1. Significant plant diversity of the meadows of Evrytania, with a large presence of aromatic plants (Greek flora catalogue)
2. Mild temperatures during the grazing season-significant amount of annual rainfall (National Observatory of Athens, data 2019-2023)
3. Absence of pollution both in the atmospheric air and in the water collections of the entire catchment area of Acheloos (National Committee of water, 2017).
4. Good adaptation of a large percentage of livestock to the special conditions of the area (Bakogiorgos et al, 2023)
5. Positive effect of grazing on meat quality (organoleptic characteristics, nutritional value) (Bakogiorgos and Pantera, 2021).
6. Positive effect of regular grazing on the ecosystem (Lu et al, 2017)
7. Inextricable historical ties of traditional extensive animal husbandry with the region (Giannakopoulos, 2020)

2. Materials and methods

2.1. Research Area

The research area is the Prefecture of Evrytania in the Region of Central Greece, at the southern end of Pindos with an altitude ranging from 285 m (in the area of the artificial Kremaston Lake) to 2315 m (at the top of Mount Tymphristos). Evrytania has an area of 1870 sq. km and a population of 17461 inhabitants (ELSTAT 2021 census). The climate has the characteristics of a mountainous Mediterranean climate with cold and wet winters and mild summers. The entire area geologically belongs to the Olenos-Pindos zone and the Acheloos river basin. Evrytania has thousands of years of ties with

traditional extensive livestock farming and today has 5202 cattle and 56534 goats and sheep from extensive and semi-extensive farms.

2.2 Basic elements of SWOT analysis

The first element of the analysis is the positive effects of this traditional breeding method on the environment and meat quality, as well as the superior characteristics of the mountain pastures and local sheep breeds (Strengths). The second element is the inherent disadvantages (Weaknesses) of the specific breeding method in the specific area. The third element is to find the external factors that would favor the development of extensive livestock farming and free grazing in Evrytania (Opportunities). Finally, the threats are the external factors that hinder the development of extensive animal husbandry (Threats).

Table 2. Weaknesses of the extensive livestock farming

1. Small and unstabilized livestock with high genotypic and phenotypic diversity
2. Long winter, short grazing season mainly in the most mountainous areas above 800-900 meters
3. Farmers' need for a second job which constitutes insufficient supervision and guidance of herds
4. Relatively low productivity of the pastures-absence of improvement projects (Papanastasis and Giannakopoulos 1989)
5. Lack of infrastructure in the pastures (farm roads, watering cans, shelters) (Pantera et al, 2002)
6. Insufficient protection and heavy damage from large predators (mainly wolf) (Bakogiorgos et al, 2022)
7. Incalculable influence of the climate (dry periods, unexpected changes in the weather, etc.)

Key factors that must be taken into account are pasture composition, pasture production, rational grazing as a result of the know-how that has been passed down from generation to generation, but also in combination with grazing ability, the correct distribution of animals and the consequent uniform grazing of the pasture. Another important factor is the degree of security of the pasture (presence of predators, etc.), but also the duration of the grazing season: different are the benefits for a grazing period of three months, different for a period of four months, five and so on. Also important is the coverage of supplementary nutritional needs, both coarse and concentrated animal feed, through own production, local production or importation.

2.3 Evaluation

There cannot be a quantified evaluation of the analysis because each factor has a different specific weight in terms of its effect on the viability of the farm. However, the analysis reveals important possibilities and opportunities that, with appropriate strategic planning, can improve the sustainability prospects of farming.

2.4 Accelerating policies.

Accelerating policies aim to highlight and further improve the factors that work positively. A key measure

is the improvement of the quality of the products which, with appropriate measures, can contribute to increasing the sale price of the products. It is also very important to secure at least a strong brand name for the meat products of a region, in fact focusing on the existing consumer trend towards "local" products and the non-preference for products of intensive ("industrial type") livestock farming. This perspective, especially if it obtains a product "stamp" of Protected Designation of Origin (PDO) or Protected Geographical Indication (PGI) can have a positive impact on the local economy, since the supply of local shops (butchers, restaurants) with such "places" products has the effect of strengthening the "peculiar" local characteristics of the area in question as a whole, expanding its profile as an agro-tourism destination.

Table 3. Opportunities of the extensive livestock farming

1. Consumer trend for better quality meat, with less harmful effect on human health
2. Promotion procedures with the possibility of PDO or PGI certification
3. Claiming a better selling price for meat and meat products
4. Partial independence from increased feed costs
5. Resilience of breeding against asymmetric fluctuations in production costs (electricity, fuel, feed, etc.)
6. Supplying the local market with products with a strong brand name.
7. Fixed income for the area
8. Contribution to mild agro-tourism development.
9. Wildfire prevention (Mirazo-Ruiz, 2011)
10. Contribution to tackling climate change (Euromean Commission, 2021)

Another key parameter of an accelerating policy should be the improvement of pastures, with measures such as fertilizing, adding watering points, dealing with invasive plants.

Table 4. Threats for the extensive livestock farming

1. Aging of the population, removal of the young
2. Work around the clock, all year round in difficult conditions
3. Low income
4. Absence of infrastructure (bad road network, isolation of the area, insufficient health-educational infrastructure)
5. Few recreational opportunities (cultural, sports activities)
6. Incomplete compensation regulation for livestock losses (ELGA)
7. Counterproductive subsidy regime
8. Supply price pressure from traders and intermediaries
9. Increases and decreases in demand due to fluctuations in the purchasing power of the population
10. Risks from a possible future overall reduction in red meat consumption due to a "bad reputation" for harmful effects on the health of the consumer.

The short grazing period of "light lambs" (light lambs), i.e., lambs of 18 to 24 kg and under three months of age, do not allow the full utilization of the benefits of grazing, both in terms of improving the fatty acid profile, as well as its economics benefits (Carrasco et al, 2009). Benefits can be multiplied by increasing the length of the grazing season. Traditional lamb meat production in Southern Europe (and Greece) is based on light lambs (18–24 kg live weight, aged less than 90 days), which are weaned at around 45 days of age and then fed various combinations with the use or not of concentrates. However, the increase in slaughter age and by extension the increase in the weight of lamb carcasses could increase the production of lamb meat even by 30% in the country (Tsolakidis, 2007). If, however, this "extension" for the slaughter coincides with the period of free grazing (April to October for the most mountainous areas), the financial cost will be minimal, and the benefit multiplied.

2.5 Structural policies

Less dependence on feed costs, which means lower production costs. This reduction concerns, in addition to the costs of buying animal feed, the costs of their transport and storage. Even partial independence from the need to store feed (a fact feasible, especially in regions with a mild climate throughout the year), improves the sustainability profile of the farm by reducing the size of the necessary cash reserve. The local cultivation of fodder plants can contribute to further reducing the business risk of the farm since the exposure to volatile factors that move up and down the prices of animal feed is reduced. The spike in feed costs in the 2021-2022 biennium certainly affects farmers who keep their animals in the barn more months.

Livestock farmers whose herds consist mainly of local small breeds that graze freely for the longest period of the year are less vulnerable to rising feed prices.

Through rational grazing and the use of innovative techniques, such as the grazing of mixed herds of small ruminants with cattle, improvement of pastures and ecosystem sustainability can occur with a reduction of invasive plants and a better use of grazing material (Bakogiorgos and Pantera, 2021).

3. Conclusions-suggestions

In Evrytania, an area with thousands of years of traditional ties to animal husbandry, there are significant possibilities for further development of the traditional extensive breeding system.

At country level, the contribution of traditional extensive animal husbandry to ensuring food sufficiency is important. Especially, after the pandemic, with the steep increase in energy and feed costs, the "turn to grazing" becomes almost a one-way street. In a period of instability and successive crises, where new threats, rivalries and wars tend to become a new normal, meeting the nutritional needs of the population must be based on as stable production systems as possible. One such,

perhaps the most stable over the centuries, is the Greek traditional extensive sheep and goat farming.

Especially in crisis conditions, extensive livestock farming has not only characteristics of resilience and sustainability, but also characteristics of anti-fragility, i.e., thriving and growing under negative factors, such as the sharp increase in feed and energy costs.

The above expected benefits can only be achieved with the comprehensive support of the meat products (certification, appropriate promotion, distribution network, selected points of sale), and of the producers (scientific support, state guarantees for cooperatives, development of rural infrastructure). The traditional way of production and quality products are the great advantages of Greek livestock farming. If we take advantage of them, it will be a contribution to the creation of a suitable environment to reverse the tendency to abandon the countryside and to support new breeders who will look for a professional outlet with a satisfactory income in the production of higher quality meat products (Bakogiorgos and Pantera, 2022).

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