ESTABLISHING AND DESIGNING A QUAIL FARM – A SOLUTION FOR RURAL DEVELOPMENT

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ABSTRACT: The establishment and design of a quail farm contributes to rural development by fostering economic growth, improving quality of life, and diversifying the entrepreneur's income sources. The importance of quail farming lies in ensuring the population's supply of meat and eggs, as well as in supporting the development of agriculture and the food industry.

KEYWORDS: farm, quails, meat, eggs, rural development.

1. INTRODUCTION

Rural development represents a complex process involving the modernization of infrastructure, the improvement of quality of life, and the diversification of economic activities in rural areas.

An essential solution for rural development is the establishment of a quail farm, which contributes to the economic growth of the area, strengthens food security, generates income for the entrepreneur, creates employment opportunities, supports the development of local markets, and improves access to high-quality food products.

The benefits of establishing a quail farm for rural development include:

- **job creation** (staff for bird care, feed collection, and farm management);
- **increased food production** (contributing to the production of meat and eggs, ensuring resources for local consumption and for market distribution);
- **promotion of sustainable agriculture** (modern quail farms can adopt ecological and sustainable agricultural practices, contributing to the protection of the rural environment);
- **improved rural infrastructure** (investments in infrastructure, roads, water supply, and energy).

The importance of raising quails is given by the products they provide, such as meat and manure. Quail eggs are considered functional foods, rich in proteins, minerals, and vitamins, and are recommended in numerous natural treatments or special diets. The meat is also highly valued in gastronomy for its fine texture and low cholesterol content, characteristics that allow for higher selling prices compared to conventional poultry meat (Fig. 1.1).

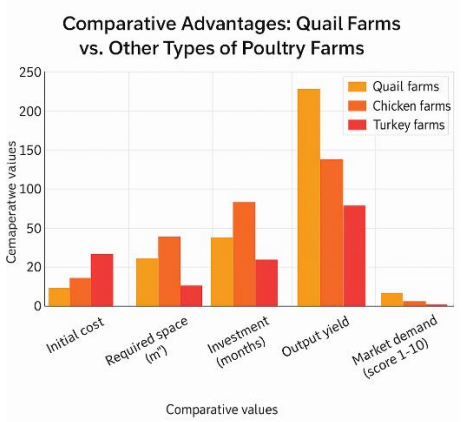

Fig. 1.1. Comparative chart highlighting the advantages of quail farms compared to chicken and turkey farms, in terms of costs, space requirements, productivity, and adaptability to market demand.

Quails (*Coturnix coturnix japonica*) are easy-to-maintain birds with excellent biological performance. A quail can produce between 250 and 300 eggs per year, and sexual maturity is reached at 6–8 weeks. These characteristics make quails an efficient alternative for small or family farms seeking to enter the agri-food market with a competitive product.

2. ESTABLISHING AND DESIGNING A QUAIL FARM

From a geographical point of view, Gorj County benefits from a diverse landscape—from the sub-mountainous area in the north to the low plains in the south—which offers various opportunities for agricultural enterprises. For a quail farm, the most suitable area is the hilly and foothill region, where the climate is mild, humidity is relatively constant, and access to water and electricity can be easily ensured. Localities such as Polovragi, Baia de Fier, Runcu, or Stănești offer available intravilan land, basic infrastructure, and proximity to distribution networks and market outlets.

An optimal location must meet the following minimum conditions: it should be protected from major pollution sources (heavily trafficked roads, factories), allow good natural ventilation, and not be exposed to risks such as flooding, landslides, or severe drought. Additionally, it is important that the land be situated at a reasonable distance from households, schools, or food service units, in order to avoid potential sanitary or social conflicts, Fig. 2.1.

Fig. 2.1. Quail farm – 3D model

In practical terms, a small-sized farm designed to produce approximately 500–1,000 eggs per day can operate efficiently on a plot of 500–800 m². This area is sufficient to accommodate the animal shelters, storage spaces, access pathways, water reservoir, concrete platform for sanitation, and a possible annex building intended for packaging or primary processing of products.

The functional layout of the land must be designed so that the workflow is as efficient as possible while also respecting biosecurity principles. According to best practices in animal husbandry, it is recommended to divide the land into four distinct areas:

- **Production area** (quail-raising halls)
- **Technological area** (spaces for feed preparation, egg storage)
- **Administrative area** (office, changing rooms, sanitary facilities)
- **Sanitization and waste management area**

For every 100 quails raised in battery cages, a built surface area of approximately 0.8–1 m² is required. Thus, a 50 m² hall can accommodate up to 5,000 birds, provided that the maximum allowed density and ventilation and lighting standards are respected. In the case of floor-based systems (less common), the required surface area is significantly larger — by 3 to 5 times — which also implies higher maintenance costs, as shown in Table 1.

Table 1. Technological equipment and technical characteristics

Technological Equipment	Technical Characteristics
Cages / battery systems for quails	Made of galvanized wire or stainless steel. Equipped with manure collection trays. Includes automatic watering and feeding system.

Technological Equipment	Technical Characteristics
Watering and feeding system	Water nipples. Linear feeders or frontal trays. Main water tank with filter.
Incubator and hatcher	Capacity of 300–2,000 eggs. Automatic control of temperature, humidity, and egg rotation.
Climate control equipment	Ventilation fans and exhaust hoods. Infrared lamps (for chicks). Digital thermostat and hygrometer.

Selecting the appropriate quail breed for a commercial farm is an essential factor that directly influences productivity, profitability, and the characteristics of the target market. Depending on the objectives of the operation—egg production, meat production, or a combination of both—the choice of breed must be made carefully, considering both the biological characteristics of the birds and the requirements of the local and regional markets, Fig. 2.2.

Fig. 2.2. Various quail breeds

On the European market, there are numerous suppliers offering commercial hybrids with superior performance, selected according to specific production objectives. These hybrids can be adapted for large-scale farms where maximum economic efficiency per unit of space and feed is pursued, Fig. 2.3.

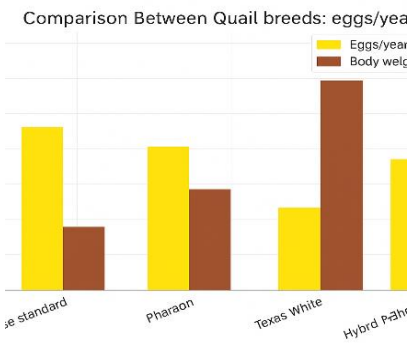

Fig. 2.3. Comparative chart of the main quail breeds, highlighting the differences in annual egg production and average body weight.

3. ECONOMIC ANALYSIS OF THE QUAIL FARM

The economic analysis of a farm project involves evaluating the costs, revenues, and long-term profitability.

Table 2. The initial investment

Componentă	Valoare (lei)
Hall setup + platforms	65.000
Battery cages + watering/feeding systems	47.000
Ventilation and lighting	15.000
Packaging equipment + refrigeration	18.000
Generator + design services	13.000
TOTAL	≈188.000

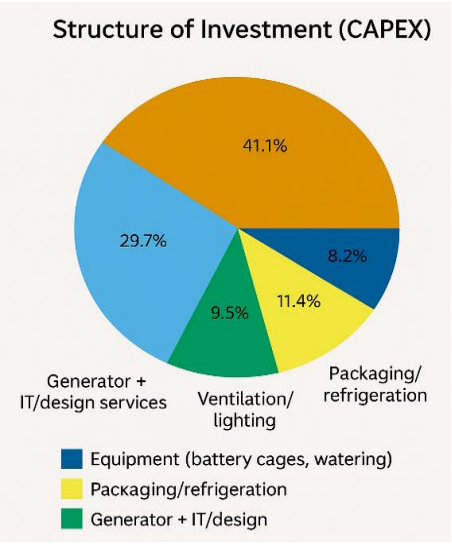

Fig. 3.1. Structure of Investment

Table 3. Operational costs

Type of expense |	Justification	Annual (lei)
Feed	Feed – ~25 g/bird/day → 16,425 kg/year	72.000
Salaries	Salaries – Manager + 2 workers + accountant	160.000
Energy and water – ventilation, lighting, refrigeration	Energy and water – ventilation, lighting, refrigeration	10.000
Veterinary + hygiene – disinfectants, treatments	Veterinary + hygiene – disinfectants, treatments	9.000
Packaging + marketing – trays, labels, promotion	Packaging + marketing – trays, labels, promotion	10.000
Other – taxes, repairs, insurance	Other – taxes, repairs, insurance	21.500
TOTAL		≈282.500

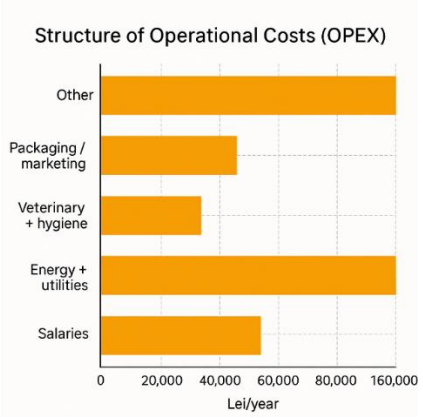

Fig. 3.2. Structure of Operational Costs (OPEX)

Table 4. Revenues and financial indicators

Indicator	Value
Annual revenue	≈330.000 lei
Annual expenses	≈282.500 lei
Annual net profit	≈47.500 lei
ROI	≈25%
Payback	≈4 ani
IRR (5 years)	≈20%

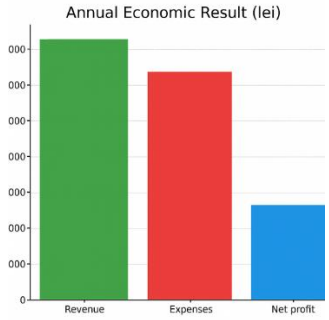

Fig. 3.3. Annual Economic Result

Table 5. Sensitivity analysis (summary)

Modified parameter	Effect on profit	Payback (years)
Egg price –10%	~14.500 lei	≈13
Egg price +10%	~80.500 lei	≈2.4
Feed +15%	~36.700 lei	≈5.2
Retail mix 40%	~64.500 lei	≈3.0

The results indicate a viable and scalable business, with a profitability of approximately 25% and an investment recovery period of 4 years, with potential for growth through optimization of sales channels and feed costs.

4. CONCLUSIONS

The quail farm represents an efficient and scalable alternative for rural entrepreneurship, requiring a moderate initial investment and offering a short production cycle. The economic analysis shows a net profit of approximately 47,500 lei/year in a conservative scenario, an ROI of around 25%, and a payback period of about 4 years — values that can be improved by increasing the share of retail sales and capitalizing on derived products. Careful design of the technological flow

and biosecurity measures, together with an active commercial strategy, transforms the farm into a replicable model for regional micro-farms.

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