

Costs and key points of chicken production on pasture

The production of chickens on pasture has mainly two types of costs, since the costs of setting up the pasture are considered external to the system followed: (1) **costs of installing the infrastructure**, which include permanent external fencing, interior fences and mobile shelters; and (2) **daily running costs**, which include workers' time to move and feed the animals, the time to clear the plot before the chickens move on (only in spring), and the price of the feed for the animals.

■ Quantification of the costs of chicken production on pasture

The quantification of what is involved in the production of chickens on pasture (Figure 1) is based on three different types of costs:

1. Cost of setting up the pasture.
2. Cost of installing the infrastructure.
3. Daily running costs of the system.

Next, we will describe the different alternatives that we have analysed for each of these processes, indicating the costs they represent and their variability (Table 1).

1. Cost of setting-up the pasture. This cost includes defining a breeding area where there is or will be a pasture. The cost of installing the grassland depends on its surface. For a batch of **400 chickens in a 60-day rotation, an approximate area of 0.96 ha** is considered adequate, corresponding to the area per day for the **400 chickens (160 -16x10-m²) for 60 days**. Therefore, two situations arise:

- In the case that the chicken farm is to be located in **an area where there is already a pasture, the cost can be considered 0**, since the activity of moving the chickens itself allows the grassland to be maintained at no additional cost. Once the chickens have moved on, **it is a good idea to clear the brush from time to time to restore the grassland**. In spring we must clear the brush even earlier, because the large amount of grass makes it difficult for the cages to be moved and the animals to move around the plot.
- **If there is no pasture in the area chosen for exploitation, costs are incurred to develop it.** These costs can be found in the sheet corresponding to the development of a pasture. In any case, **chickens in particular do not need a large pasture to start their production**, because they do not depend excessively on grass for their food and their presence ends up improving the pasture.

2. Cost of installing the infrastructure. This cost includes the exterior fencing of the entire pasture area, the interior fences to separate the daily plots, and the mobile shelters. The costs of such infrastructure are the following:

- **The permanent external fence is approximately 650 m for the area calculated for 400 chickens.** This can vary



Figure 1. Chickens on pasture, Planeses (La Garrotxa, Catalonia). Photo: Àngela Justamante.

depending on the shape of the plot used. As there are dogs on the farm protecting against predators, it is done with **hunting mesh** (€3/m). If not, you should look for a stronger mesh (such as single-twist mesh), which also costs more.

We make the interior mobile fences ourselves that delimit the daily plots. In total there are 10 units 3x0.9 m, which each cost about €15.

- A **shelter** consists of an **iron structure without a floor** (3 x 4 m) with a **raised structure** and **wheels so they can be moved by hand every day**. On the top is a canvas roof with cane that protects against water and sun. The **price** of each shelter of this type is **€200**.

3. Daily running costs of the system. The daily running of the entire chicken rearing system includes the **daily movement of the animals in the corridors established in the pasture**, and the **feeding of the chickens for a total of 60 days** until they have grown and ready to be sold. It starts with four-week-old chickens that have been raised on the farm from 1-day-old chicks (see the Costs and key points of raising young chicks and rabbits).

- Moving the animals includes **moving the mobile fences, shelter, feeders and drinkers**. This represents a total of **0.5 h per day of a farm worker** during the **60 days in which the chicks are growing**.
- In **spring** the grass grows a lot and gets very tall. At this time, another **cost** must be considered: **the time to clear the plot**, which is 0.5 h of a worker per plot. In other seasons this cost does not exist.
- **Grass represents approximately 30-40% of the chicken's diet.** The rest must be provided in the form of feed. It is calculated approximately 7 kg of feed per chicken for the total of the **60 days of growth**. **The price of the feed may vary, but the organic one is around €0.58/kg**. The time spent by a worker feeding the chickens is included with that of moving the shelters.

From these considerations, we can establish a series of simple calculations to estimate the overall costs of chicken production on pasture in agriculture fields. These calculations are based on raising a batch of 400 chickens. The total cost is the sum of two costs, since the third, that of preparing the pasture, is considered in the corresponding card:

$$C_{\text{total}} = C_{\text{infrastructure}} + C_{\text{functioning}}$$

Installation of infrastructure, the sum of two costs (per plot where there is a batch of 400 chickens):

$$C_{\text{refuge}} = \text{€ } 200/\text{refuge}$$

$$C_{\text{fences}} = 650 \text{ m} \times \text{€ } 3/\text{m} \text{ (outdoor fence)} + 10 \text{ units} \times \text{€ } 15/\text{unit} \text{ (mobile fences)}$$

Daily operation, the sum of three costs (for each batch of 400 chickens):

$$C_{\text{movement / feed}} = 0.5 \text{ h/day} \times \text{Salary/h} \text{ (from a batch)}$$

$$C_{\text{clearing}} = 0.5 \text{ h/day} \times \text{Salary/h} \text{ (per plot, only in spring)}$$

$$C_{\text{feed}} = 400 \text{ chickens} \times 7 \text{ kg feed}/(2 \text{ months and chicken}) \times 1 \text{ month}/30 \text{ days} \times \text{€ } 0.58/\text{kg}$$

■ Considerations on the optimal strategy for chicken production on pasture

We must consider the following **key points** in the production of chickens on pasture:

- As mentioned, **these costs do not include preparing the field for pasture**, which is a significant cost when starting a project. The details of these costs are in the sheet corresponding to the pasture.
- The **area of pasture per chicken is conditioned by the size of the animals**. If larger chickens are wanted, the number of chickens per batch would be lower and the area of pasture per chicken would increase.
- When chickens can grow larger, their droppings make the grass dirtier and it takes more time to return to the same plot.

- The data given in the file refer to the Broiler breed, which is a breed that grows very fast, but is not very large. If larger breeds of chickens are used, they will need more space on the pasture.
- The proposed fencing is simple because there are dogs at Planeses and a more protected fencing system is not necessary, which is also more expensive.
- The cost of having the chick from one day of age (when it arrives at the farm) until it is four weeks old and goes to pasture has not been considered in this sheet, since it is contemplated in another (Costs and key points of raising young chicks and rabbits).

Parameter	Unit	Value used	Variability and causes
Pasture area per chicken	m ² /chicken and day	0.4	It may be less. Salatin gives a value of 0.2 (70 chickens in 12 m ²)
Rotation	day	60	It may be shorter (up to 40 days), depending on whether the density of chicks is lower
Clearing the plot	h/plot	0.5	In spring, when the grass is very tall, it takes time to clear the plot. At other times it is 0.
Chicken shelter cost	€/shelter	200	These are self-built with a galvanised tube structure. They can be made of wood, which is somewhat cheaper
Cost of exterior fence with hunting mesh (includes mesh and bars)	€/m	3	It is a fence made with hunting mesh because there are dogs on the farm. If there are no dogs, the type of fence must be more resistant (e.g. simple torsion mesh) and the cost can increase up to €8-10/m
Cost of mobile fences 3x0.9 m	€/fence	15	These are self-built with a galvanised tube structure and chicken wire.
Time to move the plot	h	0.5	If it rains, it takes a bit longer. When there is a raven attack on small chickens (in spring) an aerial protection must be placed, which represents 0.5 h
Age at which chickens are placed on pasture	weeks	4	Some farmers do so at 3 weeks
Amount of feed to feed the chicken	kg/(2 months and chicken)	7	The total amount of feed that a chicken of average weight (2 kg) needs during the two months it is on the pasture is given. Not all seasons see the same consumption. In winter, consumption is higher than in summer
Time of chicken growth in the pasture	day	60	It varies slightly between summer and winter, because it takes a little longer in winter

Table 1. Parameters used to calculate the costs of forest harvesting, indicating the values used in Polyfarming and any variability that can occur in these values.