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Production of Cobb 500 Chickens under Controlled Environments at "Granja de Valle Colorado

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Production of Cobb 500 Chickens under Controlled Environments At "Granja De Valle Colorado"

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Abstract **-** The Ministry of Agrarian Development and Irrigation (MIDRAGRI) states that the poultry sector is the main source of protein for the Peruvian population. Therefore, it is essential to provide quality meats with an adequate weight, according to the Cobb-Vantress recommendations. Research, has shown that the growing environment plays a crucial role in the health and development of poultry. In the present study, the production of Cobb 500 chickens under controlled environments on the 'Granja De Valle Colorado' is addressed. The production activities have been analysed, focusing on house preparation, chick reception, rearing and eviction. Critical factors to ensure the quality of the chickens include feed, weight and mortality rate. After assessing the company's processes and parameters, analysis tools such as the Ishikawa Diagram to identify the causes of problems and Value Stream Mapping to detect delays in activities were implemented. This made it possible to define the parameters necessary to control the breeding processes in the controlled environments. Finally, a system was developed to manage the feeding, supply and control process at altitude as the chickens grow. This system also controls the water supply through drinking troughs. In addition, heaters and curtains were installed around the animal spaces to maintain a suitable temperature during growth. Regarding the management of the manure generated, a methane sensor was implemented to trigger the extraction of gases and fans to ensure adequate ventilation. The implementation of the system reduces the mortality rate from 2.5% to 0%, generating an annual income from the sale of poultry of s/ 11 047.09 nuevos soles.

Keywords**:** Cobb 500 chickens, Value Stream Mapping, Mortality rate, Weight standards, Adequate feeding.

1. Introduction

The Directorate of Statistics and Agrarian Information (DEIA) of the Ministry of Agrarian Development and Irrigation (MIDAGRI) reported in April 2023 that the poultry sector accounted for 23.1% of the gross value of agricultural production, consolidating its position as the main source of protein at national level and one of the most demanded foods by the Peruvian population [1]. This research analyses the production of Cobb 500 broiler chickens. The analysis focuses on their performance, which varies from country to country, with growth rate as a key objective. This performance is closely related to the cost-benefit of the producing companies. Farmers are not only looking for efficient growth of the birds, but also for viability and animal welfare, which is reflected in weight gain and meat quality. Newborn chicks are particularly vulnerable to environmental conditions, including climate, cleanliness, feed and disease. It is therefore essential to implement management practices that ensure optimal growth and minimisation of mortality [2].

In the United States, the Department of Poultry Science analyses poultry meat production, considering its importance in the agricultural sector and its relevance to human nutrition. High meat quality is an essential requirement, which depends to a large extent on the proper rearing of chickens on farms. To improve efficiency and reduce costs, the development of modern biotechnologies and molecular biology in poultry production has been encouraged [3]. In France, broiler production is predominantly carried out in controlled and suitable indoor growing systems. However, outdoor systems also exist, which can negatively affect meat quality due to problems such as deep breast disease, exposure to contaminants and environmental pathologies caused by viruses and bacteria [4],[5].

In Australia, the Poultry Centre focuses on maximising profits rather than minimising costs, using complex models of poultry growth and breeding genetics. Environmental variables and feed are slow to respond, so the production function is analysed as a function of inputs such as feed quality, bird genetics, housing and environment. Poultry companies employ