



Evaluation of the Feeding of Broilers with Endogenous Resources of the Northern Zone of the State Cojedes

Rivas Francisco* and Salazar Wilmer

Institution: Unellez, Vipi, Venezuela

*Corresponding Author: Rivas Francisco, Institution: Unellez, Vipi, Venezuela.

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Abstract

An experiment was carried out to know the substitution of alternative foods on the productive, health and economic indicators in the chickens of fattening raised in a family production system. We worked with agricultural products grown and harvested in the northern part of the state of Cojedes. These were harvest remains of cassava root (*Manihot esculenta* Crantz) and dried quinchoncho (*Cajanus cajan* (L.) Huth). In the case of maize (*Zea mays* L.) commercial maize flour was purchased for animal feed. 50 chickens were used per treatment in a random block design. The treatments were: T-1 formed by the mixture of 15-10-75; T-2 by mixing 10-50-40; the T-3 by 10-30-60 and the T-4 by 10-10-80 of quinchoncho, cassava flour and corn respectively, the T-5 formed by commercial feed. In the statistical analysis, the ANOVA test was used to detect significant differences between treatments and the Statgraphics Version 4 statistical package was used. The best live weight behavior of broilers was obtained with T-5; followed by T-1. In the rest of the treatments, no significant differences were observed. With respect to food consumption, it was obtained that in T-5 it was significantly higher, followed by T-1. In T-2 and T-3, the lowest food intakes were observed. However, feed conversion was better from T-1 to T-4, very close to 2.5. The greatest economic gain was obtained in the T-1; as well as profitability. It is concluded that it is feasible to use these products in the feeding of broilers, and replace commercial feed.

Keywords: Fatten Chickens; Alternative Foods; Cassava Flour; Corn And QuinchONCHO

Introduction

Global production of animal protein for human consumption grew continuously over the past 30 years at a faster rate than population growth itself. Specifically, the production of meat from broilers quadrupled in this period, as it is the one with the greatest development as a source of top-quality protein. Its production in a short time and in small spaces, make this animal group one of the main production items worldwide [1].

Sustainable agriculture is one that promotes the quality of the environment and the basic resources on which agriculture depends; it provides the necessary fibers and food for the human being, is economically viable and improves the quality of life of farmers and society as a whole [2]. Altieri (1994) cited by [3] points out, that it is a mode of agriculture that tries to provide sustained long-term yields, through the use of technologies and management practices that improve the biological efficiency of the system.

Problem statement

The production and consumption of chicken meat in the rural areas of Cojedes is low, mainly due to the high prices of concentrates; however, there is a great diversity of agricultural items that could be used in the development of formulas that cover the nutritional needs of broilers. It is known that the surpluses of plant productions are not used to the maximum, which are undervalued or are not used due to the lack of guidance or knowledge. Hence, the use of these resources could increase the consumption of white meat and achieve the diversification of production in this state, which would bring greater economic income for family groups, in addition to the educational and environmental benefits of producers.

Álvarez and De Basilio (2009) [4] and Orozco, Melen and Rodríguez, (2004) [5], report that 71% of the production costs of raising

broilers come from feed. In this sense, it is proposed that if you have the raw material for the elaboration of the concentrate in the same area, a double benefit is generated, because it contributes to the endogenous development of the region and provides added value to several of the vegetable items involved in the manufacture of the food, which is often paid to producers at low cost, so sometimes the farmer prefers to leave them in the field, which at least provide nutrients to the soil as organic fertilizer, but in turn, if they are not well managed, they become vectors of future pest attacks.

The problems of lack of food that affect human society make the feeding of animals have undergone changes, which consist of replacing the products that are traditionally used by others, which are less appreciated or not used by man, this leads to unconventional food, as well as the need to preserve the health of man through the ingestion of healthier food and to preserve the environment [6].

It is unquestionable that non-maize and sorghum producing countries find it impossible to pay the high price of cereals for the manufacture of feed. Given this reality, it is necessary to apply options that allow these foods to be produced economically or to look for other sources of energy that are cheaper to cover the consumption needs of animals [7,8].

The State of Cojedes is characterized by being an area of peasant economy, so the development of participatory research with alternative resources for animal feed is of great relevance, since it constitutes the basis for establishing more technically appropriate, economically viable and socially acceptable animal production systems. Likewise, it contributes to the projection of improving the standard of living of rural communities, while preserving and enhancing natural resources.

General Objective

Evaluate the effect of feeding broilers with endogenous resources from the northern part of cojedes State.

Specific objectives

- To assess the effect of diets with the inclusion of alternative foods (cassava and quinchoncho flours) on the productive and health indicators of fattening chickens raised in a family production system.
- To determine the economic feasibility of replacing corn and soybeans with alternative foods as sources of energy and protein for barley chickens.

Materials and Methods

Preparation of flours for mixtures. Plant material used

To carry out this research, we worked with agricultural products grown and harvested in the northern part of the state of Cojedes. These were harvest remains of cassava root (*Manihot esculenta*) and dried quinchoncho (*Cajanus cajan*). In the case of corn (*Zea mays*) commercial cornmeal was purchased for animal feed. The plant material that was used was in a state of horticultural maturity.

Obtaining the flours. Conditioning of plant material

For the realization of the different food formulas, the raw materials went through a conditioning process. For the production of cassava flour, the roots were washed and the root shell was detached, through manual peeling with a kitchen knife, then the yucca was sliced into flakes, which were placed in trays and introduced into a tray dehydrator, manufactured by the Azuara workshops, SL. Once the product was dried, dried cassava flakes were ground with the help of a 1.1.k.w. RetschMuhle mill, since it facilitates the removal of most of the hydrocyanic acid (HCN) and the subsequent storage of the flour for relatively long periods of time, according to León and Angulo (1989).

In the case of dried quinchoncho, the seeds were milled directly following the same protocol for obtaining cassava flour. Later the flours were mixed, according to the design of the experiment to be used.

Design of alternative food mixtures to be used

For the present work, four mixtures consisting of cassava flour, quinchoncho and corn were elaborated, which were designed with different percentages. These are presented in Table 1. The quinchoncho flour was kept between 10 and 15% of the weight of the mixture. Treatment 5 or control is a commercial concentrated food of the company Agrobueyca.

Mixtures	Quinchoncho (%)	Yucca (%)	Corn (%)
T-1	15	10	75
T-2	10	50	40
T-3	10	30	60
T-4	10	10	80
T-5	Food	Concentrated	

Table 1: Design of mixtures with alternative foods.

The indicators evaluated during the crianza were

Productive indicators: Live weight gain, Average daily gain (gPV/chicken/day), Feed consumption and Feed conversion: It is the ratio of the amount of feed provided to the bird in the different weeks of growth and the weight gained of the bird in the same weeks. (It was determined by the following formula)

$$C = \text{Food consumed} / (\text{Final weight})$$

Health indicators: Mortality, Morbidity and Presence of diarrhea or other diseases

Results

The behavior of the live weight of the animals, treated with different mixtures of alternative foods during the growth and fattening phase was as follows:

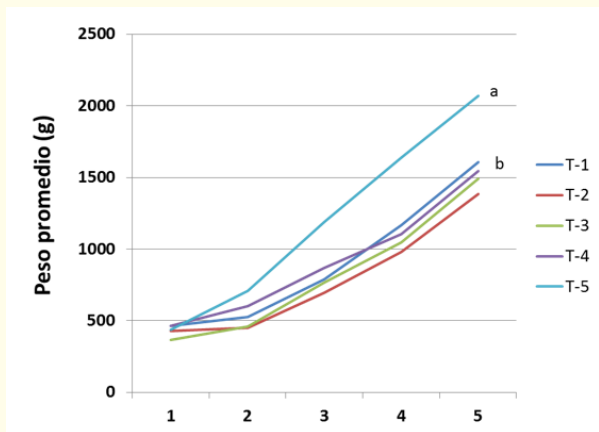


Figure 1: Behavior of the live weight of animals, treated with different mixtures of alternative foods during growth and fattening. Different letters indicate significant differences according to Tukey's Multiple Rank Test ($\alpha < 0.05$).

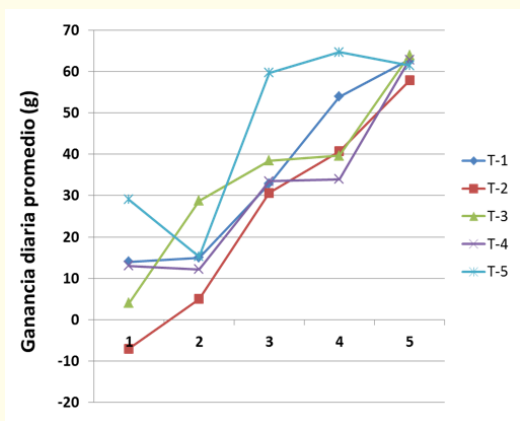


Figure 2: Average daily gain (g) of chickens, treated with different mixtures of alternative feeds during growth and fattening.

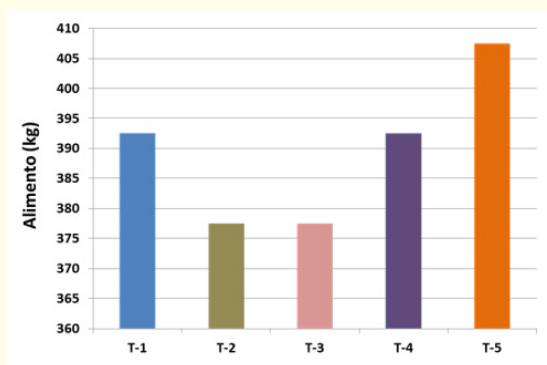


Figure 3: Total feed consumption (kg) of the birds for each treatment at the end of breeding.

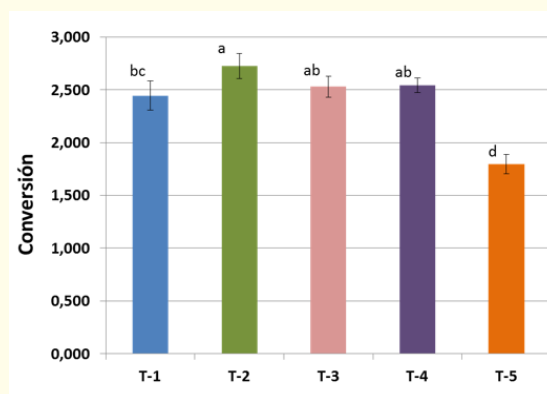


Figure 4: Feed conversion of broilers, with the use of different mixtures of food the alternative of different letters indicates significant differences according to Tukey's Multiple Range Test ($\alpha < 0.05$).

Conclusions

- The treatment number 1 was the one that evidenced the best weight gain when presenting acceptable weights at the end of the experiments.
- The number 1 treatment presented the best feed conversion, that is, there was a better relationship between the amount of feed consumed and the live weight of the bird.
- Although the weights and the food conversion were lower compared to a concentrated food, the economic profitability was much higher, in addition to having the resources in the same area.
- Treatments 2 and 3 were those that presented lower average live weight and weight gain, in turn presented a poor feed conversion it is concluded that the high content of cassava flour in the mixtures supplied in these treatments.

- Of the three flours used, it was possible to observe and verify throughout the test that the least palatability had cassava flour.

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