

## EFFECT OF PROCESSING ON THE PROFITABILITY OF ALTERNATIVE POULTRY SYSTEM

Jonas Irineu dos Santos Filho<sup>1</sup>; Élsio Antônio Pereira de Figueiredo<sup>2</sup>

<sup>1</sup> Embrapa Suínos e Aves Researcher, Concórdia, SC, Brazil. CEP 89.700-000

<sup>2</sup> Embrapa Suínos e Aves Researcher, Brazil

**ABSTRACT:** Following the neoclassical theory we have that the optimal production decision is determined by the ratio of marginal revenue and marginal cost of production, which must be higher than or equal to 1. For broiler production the marginal cost is easily measured, however marginal revenue will depend of the product sales form. The animals may be sold in three three ways: alive and subsequently slaughtered by another, slaughtered and sold whole by the same producer and slaughtered and sliced by the same producer. Thus, this study evaluated the economic optimum performance in broiler production, slaughtering and cutting, using experimental data from three strains of chickens (1-Ross 308, 2-French Naked Neck genetics (ISA JA 57), and 3-Embrapa 041 free-range in 3 rearing systems: T<sub>1</sub>-confined, T<sub>2</sub>-semi-confined and T<sub>3</sub>-free-range. The decision based on the final sale price of the product instead of producer price increased profit, because modified the slaughter age. The results showed that the decision to commercialize the whole chicken already slaughtered changed the slaughter age (from 70 to 77 days) in T1 for lineage B and C. The decision of slaughter and sell the sliced chicken changed the age of slaughter of Genetics A at T1 (63 to 91 days), in Genetics B at all treatments (70 to 77 days) and of Genetics C at T1 and T3 (70 to 77 days). Thus the decision to process the poultry increase the farm profit by incorporation of the new link (industry) as well as by better definition of the optimal slaughter weight.

**KEYWORDS:** alternative poultry system, economics evaluation, marketing

### INTRODUCTION

The evolution of the global agribusiness has moved towards a greater integration between markets. Thus, the analysis of the economic sectors independently can lead to conclusions that do not reflect the best market condition. The chain of chicken production in Brazil is one of the most organized and integrated, being the precursor of organizational arrangements of vertical and almost vertical integration. However, alternative poultry production is still a beginner activity in Brazil. This poultry system is still small, scattered, and uncoordinated. Therefore, the producers' decision making can be influenced by mismatches.

The slaughter weight for maximum profit can be affected by the degree of market integration. Thus, broilers can be produced and sold live directly to consumers, can be produced by third parties and subsequently killed and marketed by an agribusiness, and finally, can be produced in an integrated production system. Thus the objective of this study was to evaluate the change in age and slaughter weight when changing organizational arrangements of production.

### MATERIALS AND METHODS

The experiment began on April 15, 2002 and was conducted at the Experimental Farm of Suruvi at Embrapa Swine and Poultry, Concordia, SC. Three strains of broiler

chicks were housed in mixed batches: 1) Ross 308 (strain 1), 2) French Naked Neck genetics - ISA JA 57 (strain 2), and Embrapa 041 (strain 3). Birds were divided into three farming systems: T1) Confined with a standard density for broilers (10 birds/m<sup>2</sup>), T2) confined at low density and supplemented with vegetables and pasture, and T3) confined until 35 days of age and after transferred to mobile coops with access to paddocks with electric fence.

The economic evaluation was performed by calculating the cost of production. For this calculation, the methodology described in Santos Filho et al. (1998) and Canever et al. (1996) was used. The principle of maximum profit to be followed in this study is what causes the marginal revenue equals marginal cost. In other words, the incremental revenue obtained by keeping the broiler chicken for one additional day in production is equal to the incremental cost during this time.

The present calculations represent the optimum economic assessment of alternative production systems for chickens. The entrepreneur/producer has the option to be only a broiler producer, or a broiler producer and slaughter, or a broiler producer, slaughter and processing the birds. This study assumes that: a) the price of the alternative chicken is 50% higher than the price paid by a conventional chicken, b) the price per kg of the whole alternative chicken is 42% higher than the price of a the conventional chicken, and its carcass yield is 86%, c) the chicken in parts has a value 50% over the whole chicken carcass and presents a carcass yield of 76%, and d) the cost of killing the chicken is \$ 0.75/bird and the cutting cost is R \$ 0.20/bird.

In the analysis of return the average and marginal costs of production are calculated for the different treatments, given slaughter age ranging between 7 and 91 days. Based on production costs and revenue, the treatment with the highest profitability was identified.

## RESULTS AND DISCUSSION

The results obtained in several simulations are shown in Figures 1, 2, and 3. These results prove that the change in the way of marketing the product significantly alter the age at slaughter and consequently the slaughter weight.

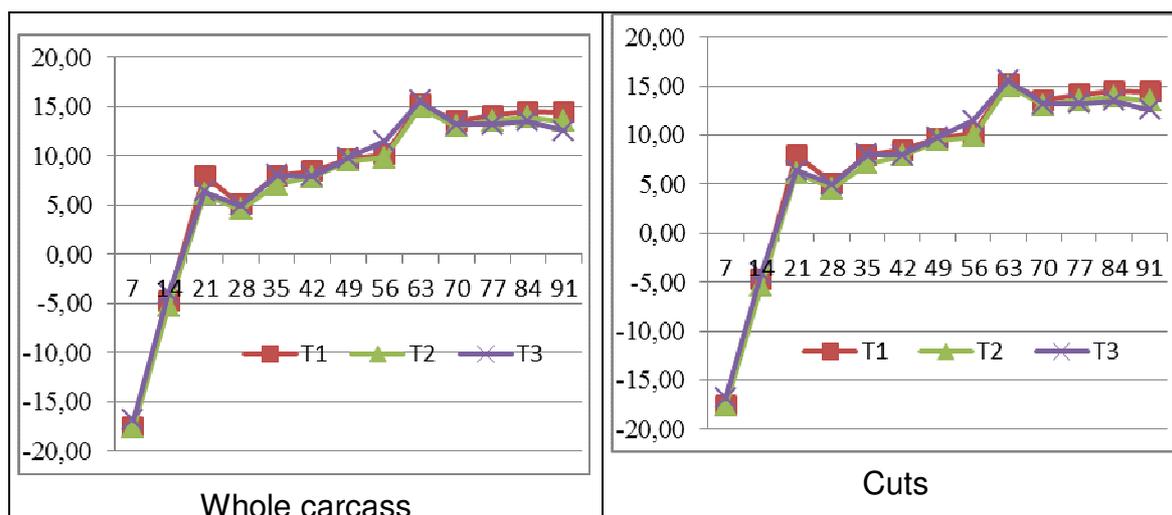


Figure 1 - Annual Return of the housing, production, whole sale and sale in cuts in different ages, using the Ross 308 strain.

Ross 300 has the highest age and slaughter weight when products are marketed slaughtered as cuts. In this strain the optimum age of slaughter when the animals are sold live or slaughtered and marketed as whole carcass was 63 days for all treatments. When the birds are slaughtered and sold in cuts the optimum age of slaughter was 91 days in treatment 1 and 63 days in treatments 2 and 3. This strain had the growth curve modified by feed restriction. Therefore, different strategies of feed management can alter the results observed.

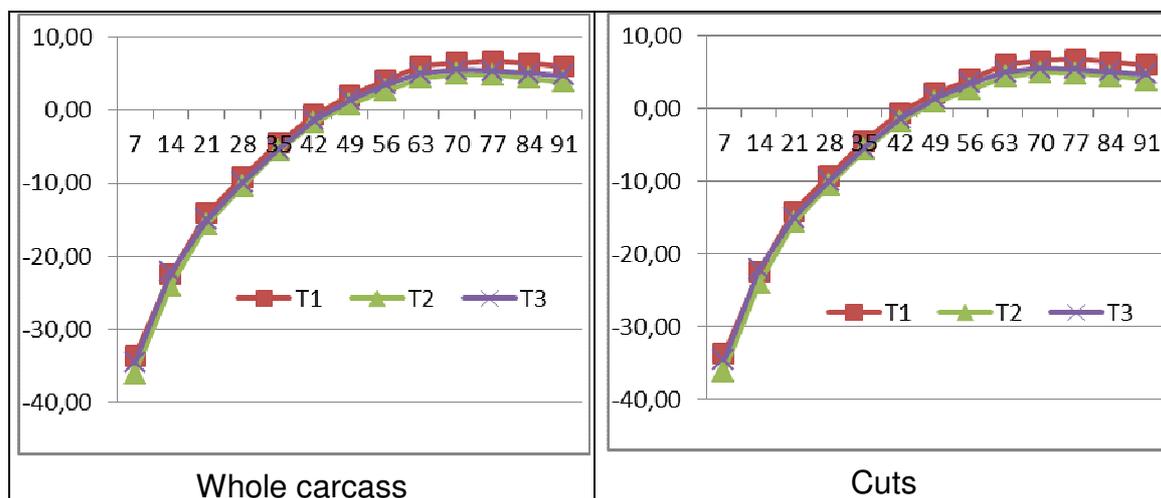


Figure 2: Annual return of housing and production of a chicken slaughtered at different ages by using the French Naked Neck genetics (ISA JA 57) strain.

In naked neck French - ISA JA 57 strain, the age of 70 days was the best slaughter age for all treatments when the animals are sold alive. However, when the animals are slaughtered and sold as whole carcass, slaughter age was increased to 77 days in treatment 2, and when sold in cuts the age of 77 days was the best for all treatments.

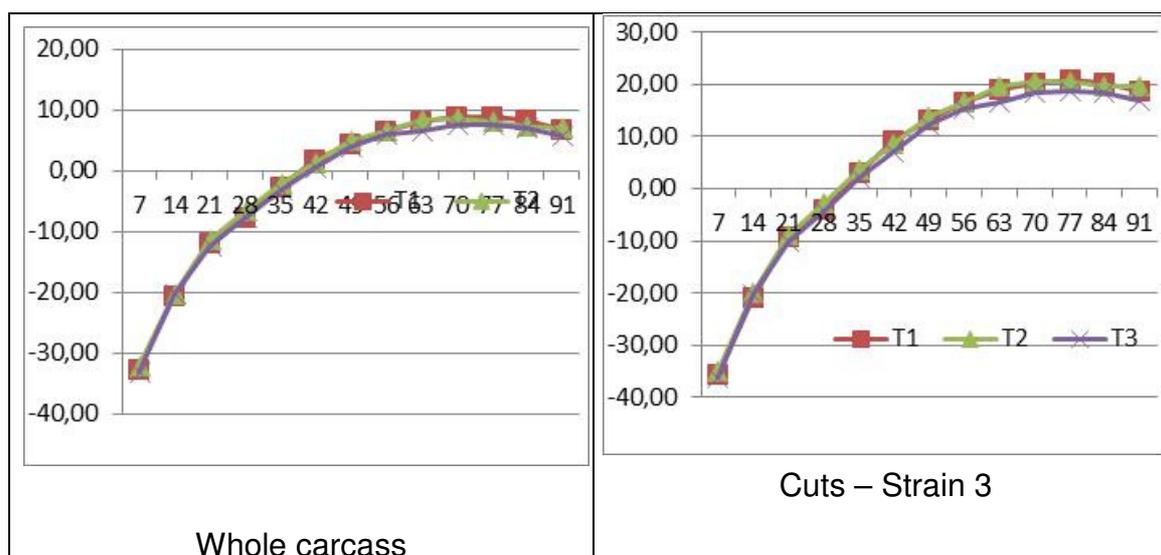


Figure 3 - Annual Return per chicken slaughtered at different ages using Embrapa 041 strain.

Finally, for Embrapa 041 strain, the optimum age of slaughter was 70 days for treatments 1 and 3, and 63 days for treatment 2 when the animals were sold alive. When the animals were slaughtered and marketed as whole carcass, the optimum age for slaughter is 77 days for treatment 2, and 70 days for treatments 2 and 3. Finally, when the marketing is as cuts, the slaughter age was increased to 77 days for treatments 1 and 3, and 70 days for treatment 2.

## CONCLUSIONS

The way to market the chicken changes the age and slaughter weight and profitability of the activity. The difference in economic results was small between farming systems while it was high between different forms of marketing.

## REFERENCES

**CANEVER, M.D.; TALAMINI, D.J.D.; CAMPOS, A.C.; SANTOS FILHO, J.I. DOS; GOMES, M.F.M.** (1996) Custos de produção do frango de corte no Brasil e Argentina. Concórdia: EMBRAPA-CNPSA, 37p.

**SANTOS FILHO, J. I. ; CANEVER, M. D. ; CHIUCHETTA, O. ; TALAMINI, D. J. D.** (1998) . Aspectos econômicos e viabilidade da criação de frangos no sistemas convencional e automatizado. In: Simposio Internacional de Ambiência e Sistema de Produção Avícola, 1998, Concórdia. Simposio Internacional de Ambiência e Sistema de Produção Avícola. Concórdia : Embrapa Suínos e Aves, v. 1. p. 1-13.