

The Effect Of Applying Corn Leaf Flour And Seaweed To The Parts Of Broiler Chicken Carcasses Kept In Litter Cages

Sri Selviana Suudi*¹, Ellen J. Saleh,² Suparmin Fathan³ & Srisukmawati Zainudin⁴

^{1,2,3,4}Department of Animal Science, Faculty of Agriculture, Universitas Negeri Gorontalo,
Bone Bolango, Indonesia

Corresponding Author: ellensaleh9@gmail.com

Abstract

The purpose of this study is to determine the effect of carcass parts on broiler chickens fed corn leaf flour and seaweed. This study used a Complete Random Design (RAL) with 6 treatments and 4 replicates. The treatment provided was the administration of seaweed flour and corn leaf flour to 96 broiler chickens aged 2 weeks. The experimental feed used in this study was P0 (commercial feed), P1 (10% corn leaf meal), P2 (10% seaweed meal), P3 (5% corn leaf meal + 15% seaweed meal), P4 (10% corn leaf meal + 10% seaweed meal), and P5 (15% corn leaf meal + 5% seaweed meal). The observed research variables were cut weight, chest weight, thighs, wings, and back. The results of this study were that corn leaf flour and seaweed flour did not have a real effect on the weight value of the chest, thighs, wings, and back. It was concluded that the application of corn leaf flour and seaweed had an effect on the weight of the broiler chicken carcass.

Keyword: Corn leaves, chicken carcasses, seaweed.

INTRODUCTION

Broiler chickens are one type of chicken that is widely cultivated for commercial purposes. Broiler chickens are widely known for their rapid growth and can be kept in large quantities. Broiler chickens are a type of chicken that is developed specifically for meat production purposes. These chickens have rapid growth and a high proportion of meat. This advantage makes broiler chickens the main choice in the livestock industry to meet the needs of chicken meat in the market. Unlike laying breed chickens that focus on egg production, broiler chickens are specially developed to produce quality meat. Broiler chickens are chickens that are cultivated by technology. Basically, this chicken is divided into 2 parts, namely broiler chickens and laying breed



chickens.

Broiler chickens are a type of purebred chicken that specializes in producing meat. This type of chicken breed has a fast growth so that within 4-5 weeks it can be harvested. The meat produced is tender and very popular with the public. Products from this breed chicken have an important role as a source of animal protein which is relatively cheap. Broiler chickens need good maintenance to be able to achieve optimal production. The success of broiler chicken production is expressed in the performance or appearance of broiler chickens which can be measured through mortality, feed consumption, final body weight, feed conversion ratio (FCR), and performance index (IP). To be able to achieve optimal performance of broiler chickens, the influencing factors are seeds, feed, and management or management.

Feed plays an important role in the productivity of poultry livestock as a provider of nutrients for meat and egg production. However, the obstacles faced by farmers today are the dependence on imported feed at relatively high prices and some feed ingredients tend to have fluctuating prices so that production costs are not fixed; As a result, the magnitude of profits is unpredictable. One of them is to utilize abundant plantation waste and animal feed plants, namely corn leaves.

Seaweed contains large amounts of minerals (such as calcium, phosphorus, and magnesium) as well as vitamins (such as vitamins A, C, and B12), which are essential for supporting the health of broiler chickens. Seaweed contains amino acids and essential fatty acids that help accelerate the growth and development of chicken muscles. This is important to increase the growth rate of broiler chickens and the quality of the meat produced. The antioxidant content in seaweed, such as carotenoids and polyphenols, can help boost the immune system of chickens, making them more resistant to disease and infection.

Corn leaves are a by-product of the corn plant that is commonly used as animal feed. Corn leaves contain fiber that is good for the digestion of chickens and helps to improve the fermentation process in the chicken's intestines. Although not as dense as corn kernels, corn leaves have a number of nutritional content such as crude proteins, carbohydrates, and minerals, which can provide benefits for chicken growth, especially in situations where other feed ingredients may be expensive or difficult to come by. The results of the proximate analysis of 45-day-old corn leaves contained crude protein content of 13.73%, crude fat 4.84%, and crude fiber 28.42%, as well as ash content of 9.22% (in % BK). Younger corn leaves have a high nutrient content, while older corn leaves have a low nutritional content (Hafsa, 2023).

Broiler chicken carcasses are usually marketed whole or in pieces. Generally, commercial pieces of broiler chicken carcasses include wings, chest, thighs, and backs (Ulopi *et al.*, 2018). The





weight of life is in line with the weight of the carcass; The higher the life weight, the higher the carcass weight. The percentage of carcass weight to live weight is often used as a reference for the size of slaughter livestock production. Chicken carcasses are usually divided into 4 parts, namely the chest, thighs, back, and wings. It is further explained that the percentage of broiler body parts is 65-75% of the carcass; 6.41% wool; 9-10% viscera; 9-10% of the blood; 7.8% of the head and neck; and 4.40% of feet.

METHOD

This research will be carried out in an experimental cage in Molalahu Village, Pulubala District, Gorontalo Regency. This research will be carried out for 45 days starting from January to February 2025. The ingredients used in this study were 96 2-week-old broiler chickens, drinking water, vitamins, medicines, disinfectants, seaweed flour, corn leaf flour, and concentrate (BR1).

The tools used are a 50 x 300 litter cage totaling 24 boxes, feed and drinking containers, lamps as lighting devices, cage cleaners, stationery, scales, scalpels, and documentation tools. The design that will be used in this study is a Complete Random Design (RAL) of 6 treatments with 4 replicates. The treatment provided was the administration of seaweed flour and corn leaf flour. Here are the levels of grants:

P0: 100% Commercial Feed

P1: 10% Corn Leaf Flour + 90% Commercial Feed

P2: 10% Seaweed Flour + 90% Commercial Feed

P3: 5% Corn Leaf Flour + 15% Seaweed Flour + 80% Commercial Feed

P4: 10% Corn Leaf Meal + 10% Seaweed Meal + 80% Commercial Feed

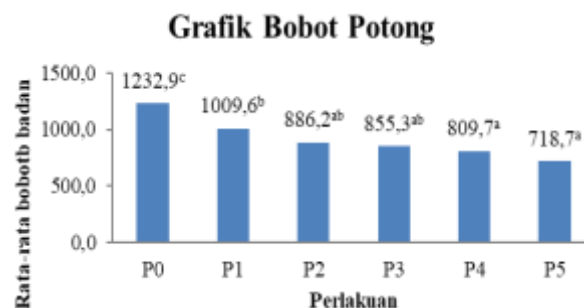
P5: 15% Corn Leaf Flour + 5% Seaweed Flour + 80% Commercial Feed

RESULTS AND DISCUSSION

Cut Weight

Higher cut weights generally result in a greater carcass weight due to increased muscle tissue mass as a major component of the carcass. According to Simanjuntak *et al*, (2023), the cutting weight is a measure used to assess the success of a livestock business.





The average slaughter weight of broiler chickens was highest in the P0 treatment (1232.9 g), and the lowest value was in the P5 treatment (718.7 g). This is suspected to be due to the nutritional content in corn and seaweed. This study is the same as a study from Rahayu *et al*, (2019), the average slaughter weight of broiler chicken is at P0 (1,990 g). According to Simanjuntak *et al*, (2023), the high and low metabolic energy in ungags animal feed will affect many chickens consuming feed.

Based on the results of the ANOVA analysis with a significance level of -0.05, it was obtained that the results of applying corn leaf flour and seaweed had a real effect ($P < 0.05$) on the cut weight, then continued with the *Duncan test*, it was found that P5 and P4 produced a cut weight value that was not significantly different, P3 and P2 were not significantly different, but significantly different from P5 and P4. P1 produces a significantly different value from all previous treatments, whereas P0 does not differ significantly from P1 but results in a higher value. This shows that the control produces the highest cutting weight, and is significantly different from other treatments.

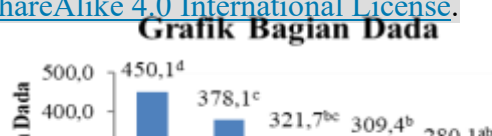
Weight of broiler chicken carcass parts

Broiler chicken carcasses are the body of chickens after being cut, skinned (if necessary), and removed from the feathers, head, neck, lower legs (shank), and internal organs (offal), except for the lungs, kidneys, and abdominal fat that are still attached (Soeparno, 2015). This carcass is then divided into several main parts for consumption and research on the weight of chicken body parts.

Chest Weight

The results of the variety analysis showed that corn leaf flour and seaweed as broiler chicken feed had a real effect ($P < 0.05$) on the breast weight of broiler chickens. The average breast weight of broiler chickens from each treatment was P0 (450.1 g), P1 (378.1 g), P2 (321.7 g), P3 (309.4 g), P4 (280.1 g), P5 (234.9 g). Chest weight in the P1 to P5 treatment experienced a

400



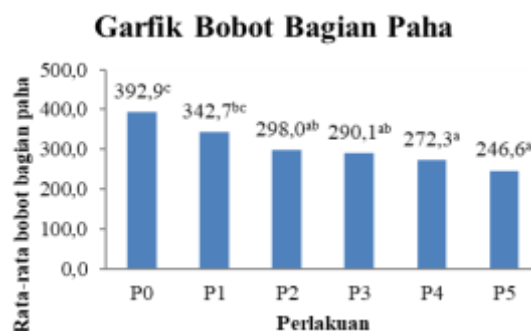
significant decrease from the P0 treatment. This is suspected to be due to the high crude fiber, low protein content of corn, the presence of anti-nutrient compounds from seaweed, and nutritional imbalances that reduce protein deposition to the chest muscles.

Based on figure 2, the P0 treatment gave the highest chest weight, which was 450.1 g, while the treatment with a mixture of cornstarch and seaweed meal actually significantly reduced the chest weight, with the lowest value at P5 (234.9 g).

The results of ANOVA's analysis showed that the treatment of giving corn leaf flour and seaweed had a significant effect on chest weight. Duncan's follow-up test showed that the P5 treatment was significantly different from P1 and P0, the P4 treatment was not significantly different from the P3 and P2 treatments, the P1 treatment was significantly different from the P3, P4, and P5 treatments, and the P0 treatment was significantly different from all treatments. Mulyantini *et al.* (2023), commercial feed is formulated with a balanced composition of metabolic energy, protein, essential amino acids, and vitamins-minerals, so that it is able to provide optimal growth performance including the growth of chest muscles which is the largest part of the broiler chicken carcass.

Thigh Weight

The results of the variety analysis showed that corn leaf flour and seaweed as broiler chicken feed had a real effect ($P < 0.05$) on the weight of broiler chicken thighs. The average weight of broiler chicken thighs from each treatment was P0 (392.9 g), P1 (342.7 g), P2 (298.0 g), P3 (290.1 g), P4 (272.3 g), P5 (246.6 g). The P0 treatment resulted in the highest value weight compared to the other treatments. This is suspected to be because the protein and energy content is not optimal. Corn leaf flour is higher in fiber but low in quality protein, while seaweed also contains high crude fiber and hard-to-digest protein. This causes metabolic energy to decrease, so more energy intake is wasted on digestion, not muscle growth.



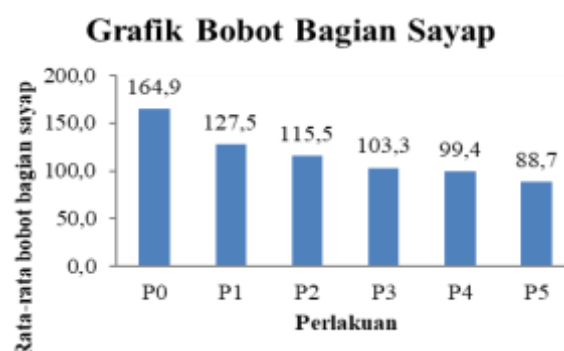
Based on Figure 3. The weight of the thigh part of the P0 treatment produced the highest value, which was 392.9 g, and in the P5 treatment produced the lowest value of the weight of the thigh part, which was 246.6 g. The results of ANOVA's analysis showed that the administration of corn leaf flour and seaweed had a real effect on the thigh weight value. Then continued the Duncan Test that the P0 treatment was significantly different ($P < 0.005$) from all other treatments, the P1 treatment was significantly different from the P5 and P4 treatments but not significantly different from the P2 and P3 treatments, the P3 and P2 treatments were not significantly different, and the P4 and P5 treatments were also not significantly different.

The highest thigh weight was obtained in chickens fed commercial feed (392.9 g). This is in accordance with the opinion of Rasyaf (2011), who states that commercial feed is formulated with a complete balance of nutrients, such as protein, metabolic energy, essential amino acids, vitamins, and minerals, so that the growth of carcasses, including thighs, can be optimal. Soeparno (2015), also added that a balanced protein and energy content greatly determines the growth of thigh muscles because this part is an active muscle that requires high energy.

The results showed that the lowest thigh weight was achieved in the P5 treatment (246.6 g). In this treatment, the proportion of seaweed in the ration was reduced to 5%, while the proportion of corn leaves was increased to 15%. This change in the composition of the ration is accompanied by an increase in the measured crude fiber content in the feed, which is suspected to play a role in the decrease in the weight of the carcass, especially the thighs.

Wing Part Weight

The results of the variety analysis showed that corn leaf flour and seaweed as broiler chicken feed had no real effect ($P > 0.05$) on the weight of broiler chicken wings. The P0 treatment was seen to be higher than the P1, P2, P3, P4, and P5 treatment. This is suspected because commercial feed has complete nutrition, good digestibility, and balanced amino acids, while cornmeal and seaweed produce limited energy and protein, high fiber, unbalanced amino acids, and low palatability.

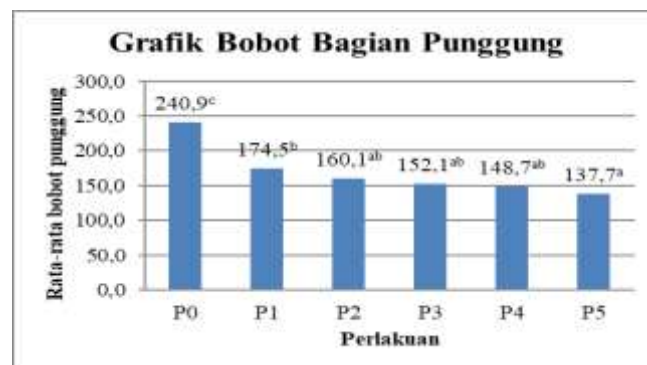


Based on figure 4, the weight of the wing in the P0 treatment produced the highest value, which was 164.9 g, while in the P5 treatment it produced the lowest value, which was 88.7 g. Based on the results of *the ANOVA* analysis with a significance level of -0.05, it was found that the results of applying corn leaf flour and seaweed did not have a real effect on the wing weight, then the *Duncan* test was not continued Because each treatment is not significantly different. However, the wing weight at P1 (127.5 g) is still higher than the combination of corn + seaweed, because the carotenoid content and natural pigments of corn leaves still contribute to the health of chickens.

Seaweed is rich in minerals (*Ca, Mg, and iodine*) as well as polysaccharides such as alginate. According to Aslawan *et al*, (2004), seaweed consists of 29.97% ash, 5.43% protein, 0.28% fat, 63.84% carbohydrates, 78.94% total dietary fiber, and 282.93% iodine.

Back Weight

The results of the variety analysis showed that corn leaf flour and seaweed as broiler chicken feed had a real effect ($P < 0.05$) on the weight of broiler chicken wings. Based on figure 5, the back weight graph, it can be seen that the weight value of the back part P0 produces a high value, while the P5 treatment produces the lowest value. This is thought to be because the fiber in corn (leaves) and seaweed accelerates the rate of digestion and decreases digestion efficiency, so that the energy and protein that should be absorbed to form back tissue are wasted.



Based on Figure 5, the weight of the back in the P0 treatment produced the highest value, which was 240.9 g, while the P5 treatment produced the lowest value, which was 137.7 g. Based on the results of *the ANOVA* analysis with a significance level of -0.05, it was obtained that the results of applying corn leaf flour and seaweed had a real effect on the weight of the back, then continued with the *Duncan* test It was found that P5 and P4 produced a back weight value that was not significantly different, P3 and P2 were both not significantly different, but significantly



different from P5 and P4. P1 produces a significantly different value from all previous treatments, whereas P0 does not differ significantly from P1 but results in a higher value.

The results showed that the P0 (commercial feed) treatment produced the highest chicken back weight compared to all combinations of corn leaf meal and seaweed flour. This is in line with the opinion of Rasyaf (2019), who states that commercial feed is formulated with balanced nutritional content (energy, protein, amino acids, vitamins, minerals) so that it is able to support the growth of muscle tissue, including the back.

Corn leaf flour has a fairly high level of crude fiber (*Crude Fiber* 14–16%). According to Anggorodi (2017), crude fiber levels that are too high can reduce the digestibility of the ration because it slows down the process of nutrient absorption in the intestines. As a result, the metabolic energy that would otherwise be used for the formation of back muscles is reduced.

Seaweed contains macro and micro minerals as well as bioactive pigments, but its protein content is relatively low and high in fiber. Winarno (2018), explained that the application of seaweed in poultry feed can increase immunity, but if the proportion is high, it will reduce the efficiency of meat growth because the metabolic energy value is low. This is clearly seen in P2 (10% seaweed) which has a lower back weight than P1.

In combination treatment (P3, P4, P5), the back weight decreased. If protein and energy levels are too low, then the growth of skeletal muscles (chest, thighs, back) will decrease. The combination of corn and seaweed leads to a decrease in the availability of energy and protein so that chickens use more energy for maintenance, not for meat growth.

REFERENCE

- Anggorodi, R. (2017). *Ilmu Makanan Ternak Umum*. Jakarta: PT Gramedia.
- Anggorodi, R. (2010). *Ilmu Makanan Ternak Umum*. Jakarta: Gramedia Pustaka Utama.
- Astawan, M., S. Koswara., and F. Herdiani. 2004. Utilization of Seaweed (*Eucheuma cottonii*) to Increase Iodine and Dietary Fiber Levels in Jams and Dodol. *Journal of Food Technology and Industry* XV(1):61-69 <http://repository.ipb.ac.id/handle/123456789/29853>
- Manu, K. R., Mulyantini, N. G. A., Kallau, N. H. G., Telupere, F. M. S., & Detha, A. I. R. (2023). Fermented Feed Based on Local Ingredients in the Form of Pellets and Flour on the Performance, Carcasses and Intestinal Organs of Broiler Chickens. *Journal of Veterinary Studies*, 11(2), 198–217. <https://doi.org/10.35508/jkv.v11i2.12596>
- Mukhtar, S. H., Saleh, E. J., & Djunu, S. S. (2023). The nutritional content of young corn leaves has the potential to be animal feed. *Jambura Journal of Tropical Livestock Studies*, 1(1), 12–15. <https://ejurnal.pps.ung.ac.id/index.php/JJTLS/issue/view/110>





- Rahayu, N., & Frasiska, N. (2019). Cut Weight and Percentage of Broiler Chicken Carcasses Given Drinking Water Containing a Combination of Sambiloto Leaves (*Andrographis paniculata*) and Soursop Leaves (*Announa muricata* L). *Bulletin of Applied Animal Research*, 1(1), 31–34. <https://doi.org/10.36423/baar.v1i1.167>
- Rasyaf, M. (2019). Raising broilers. Jakarta: Self-Sustaining Spreader.
- Simanjuntak, D. B., Pradana, T. G., Rusdhi, A., Siswoyo, P., Putra, A., & Negara, A. B. W. (2023). Effect of the use of probio GAP 1 in rations on broiler chicken carcasses. *Proceedings of the Seminar of Social Sciences, Engineering & Humanities (SENSEHE)*
- Soeparno. (2015). *Ilmu dan Teknologi Daging*. Yogyakarta: Gadjah Mada University Press.
- Suthama, N. (2020). *Nutrisi Unggas Tropis*. Semarang: Diponegoro University Press.
- Ulopi, N., Nuraini, H., Parulian, J., & Kusuma, S. Q. 2018. Characteristics of Carcasses and Non-Carcasses of Male and Female Broiler Chickens at 30 Days of Slaughter Age. Department of Animal Production Science and Technology, Faculty of Animal Husbandry, IPB. *Journal of Livestock Production Science and Technology*, 6(1), 1–5. <http://journal.ipb.ac.id/index.php/ipthp/index>
- Winarno, F.G. (2018). *Food Chemistry and Nutrition*. Jakarta: PT Gramedia Pustaka Utama.
- Wahyu, J. (2018). *Ilmu Nutrisi Unggas*. Gadjah Mada University Press

