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The Effect of Corn Leaf and Seaweed Flour Supplementation on The Carcass Cuts of Broiler Chickens Raised In Slatted Housing

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Abstract

This research aims to determine the effect of corn leaf flour and seaweed flour on the carcass weight of broiler chickens raised in slatted pens. The study used 96 broiler chickens aged 2 weeks with a completely randomised design (CRD) consisting of 6 treatments and 4 replicates. The treatments included commercial feed (P0), 10% corn leaf meal (P1), 10% seaweed meal (P2), and combinations of corn leaf meal and seaweed meal (P3, P4, and P5). The variables observed included the weight of the wing, breast, thigh, and back pieces. The data were analysed using ANOVA and LSD post hoc tests. The results showed that the administration of corn leaf flour and seaweed had a significant effect (P<0.05) on all parts of the broiler chicken carcass. Treatment P0 produced the highest livestock weight, but treatment P1 produced relatively similar results. Increased use of seaweed tends to reduce carcass weight. It was concluded that the use of corn leaf flour up to 10% can still be used in broiler chicken rations without significantly reducing carcass weight.

Keyword: broiler chicken, corn flour, seaweed, carcass, slatted cage.

INTRODUCTION

Broiler chickens are a type of livestock that is able to produce meat that acts as a source of animal protein (Son *et al*., 2021). The poultry industry in Indonesia is currently experiencing significant growth, especially in the broiler chicken farming sector. Progress in the chicken farming business, especially broiler chickens, is driven by population growth and an increase in the per

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capita income of the community Success in broiler chicken production can be seen from the performance or appearance of chickens which are measured based on several indicators, such as mortality rate, amount of feed consumption, final body weight, feed conversion ratio and performance index To achieve optimal results, There are several main factors that influence, including the quality of the seeds used, the type and balance of nutrients in the feed, and the maintenance management system that includes aspects of health, cage environment, and feeding management

Some of the local feed raw materials that have the potential as alternative feed raw materials are seaweed flour and corn leaf flour. Seaweed and corn leaves have complete nutritional content. The use of seaweed and corn leaves as alternative feed for broiler chickens provides various benefits, both in terms of nutrition and cost efficiency. Seaweed contains protein, minerals, fiber, antioxidants, and natural pigments that contribute to increased growth, immune system, and the quality of chicken meat and skin. Meanwhile, corn leaves contain protein, fiber, vitamins, and minerals that play a role in supporting metabolic processes and increasing the effectiveness of feed use (Hafsha *et al*., 2023)

According to Primasanti (2014), the use of seaweed flour in the ration has no effect on the carcass of broiler chickens The weight of broiler chicken carcasses is greatly influenced by the age of the weight. According to Saleh and Rachman (2023), The use of corn leaf flour in broiler chicken feed formulations up to the level of 20% did not show a significant effect on feed consumption levels. The higher the live weight of the broiler chicken, the greater the weight of the carcass that can be produced. According to research (Juniarti *et al*., 2019) The application of seaweed meal in the ration showed the most significant and superior influence. According to (Acres *et al*., 2023), The use of corn leaf flour in feed formulations is considered to be able to have a positive impact on Growth performance and yield quality**,** Includes Carcass Percentage.

METHOD

This study was carried out from February to March 2025 for 45 days in an experimental house in Molamahu Village , Pulubala District, Gorontalo Regency, using 96 2-week-old broiler chickens. The feed used consists of corn leaf flour and seaweed.

The method used was a Complete Random Design (RAL) with 6 treatments and 4 replicates. The data obtained was analyzed using the ANOVA (*analysis of variance*) method with the following composition: P0 = commercial feed, P1 = Ration using 10% corn leaves, P2 = Rations using 10% seaweed, P3 = Rations using 5% corn leaves + 15% seaweed, P4 = Rations using 10% corn leaves + 10% seaweed, P5 = Rations using 15% corn leaves + 5% seaweed.

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RESULTS AND DISCUSSION

Research Results Average Weight of Carcass Pieces Fed Corn Leaf Flour and Seaweed.

Table 1. A Piece of Paper Wrapped in Wings,

Treatment	Wing Weight (g)
P0 (commercial feed)	131.52 ± 5.23a
P1 (10% Corn Leaves)	127.19 ± 6.76a
P5 (15% corn leaves + 5% seaweed)	116.97 ± 8.43b
P4 (10% corn leaves + 10% seaweed)	110.70 ± 7.59bc
P3 (5% corn leaves + 15% seaweed)	107.63 ± 10.91c
P2 (10% seaweed)	106.34 ± 9.07c

Description:

Values with the same letter superscript in the same column showed no significant difference ($p > 0.05$) based on the LSD follow-up test.

The results of the fingerprint analysis (ANOVA) showed that the application of corn leaf flour and seaweed in the ration had a significant effect on the weight of the wings of broiler chicken carcasses ($p < 0.05$). Based on the LSD follow-up test, the highest average wing weight was obtained in the P0 treatment (commercial feed) of 131.52 ± 5.23 g, which is statistically not significantly different from the P1 treatment (the addition of 10% corn leaf flour) by 127.19 ± 6.76 g. Furthermore, the results of the LSD follow-up test showed that the P5 treatment (15% corn leaf + 5% seaweed) resulted in a wing weight of 116.97 ± 8.43 g, which is significantly lower than P0 and P1, but not significantly different from the P4 treatment (10% corn leaf + 10% seaweed) by 110.70 ± 7.59 g. Treatment with a higher proportion of seaweed, namely P3 (5% corn leaf + 15% seaweed) and P2 (10% seaweed), showing the lowest wing weight respectively 107.63 ± 10.91 g and 106.34 ± 9.07 g, and not significantly different from each other. The results of this study are in line with the findings Mait *et al.*, (2019), which reported that variations in coarse fiber sources in broiler feed had a significant effect on carcass weight and broiler chicken carcass components where increased coarse fiber tended to decrease overall carcass weight and specific carcass pieces.

Table 2. Average weight of chest cut

Treatment	Chest Weight (g)
P0 (commercial feed)	431.39 ± 17.12a

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Treatment	Chest Weight (g)
P1 (10% Corn Leaves)	389.34 ± 7.54b
P5(15% corn leaves + 5% seaweed)	323.46 ± 7.62c
P2 (10% seaweed)	321.86 ± 18.80c
P3 (5% corn leaves + 15% seaweed)	284.94 ± 13.94d
P4 (10% corn leaves + 10% seaweed)	280.57 ± 28.73d

Description:
Values with the same letter superscript in the same column showed no significant difference ($p > 0.05$) based on the LSD follow-up test.

Based on the results of data processing in table 2, the analysis of multiple fingerprints (ANOVA) revealed that the variation in the feeding of corn leaf flour and seaweed in the ration had a very significant effect on the weight of broiler chicken carcass breast pieces ($p < 0.05$). These findings suggest that the growth response of the chest muscle section differs between the ration treatments used. Based on the LSD follow-up test, the P0 (commercial feed) treatment showed the highest chest weight, which was 431.39 ± 17.12 g, which was significantly higher than all other treatments. The P1 treatment (the addition of 10% corn leaf flour) resulted in a chest weight of 389.34 ± 7.54 g, which, although lower than P0, was still markedly different from the treatment that combined corn leaf meal and seaweed in larger quantities. These results indicate that commercial feed substitution with 10% corn leaf meal can still support chest muscle growth even though it is not as high as full commercial feed. The P5 (15% corn leaf + 5% seaweed) and P2 (10% seaweed) treatments resulted in chest weights of 323.46 ± 7.62 g and 321.86 ± 18.80 g, respectively, which were statistically not statistically different from each other, but lower than P0 and P1. Similarly, P3 (5% corn leaves + 15% seaweed) and P4 (10% corn leaves + 10% seaweed) showed the lowest chest weights (284.94 ± 13.94 g and 280.57 ± 28.73 g) and did not differ markedly from each other. Haryadia *et.al,* (2015), Rations with a high content of crude fiber tend to decrease the efficiency of nutrient use, which further affects the weight of the carcass and parts of the chicken carcass, especially the chest muscles which require adequate energy and protein intake.

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Table 3. Average weight of thigh pieces

Treatment	Thigh Weight (g)
P0 (commercial feed)	390.11 ± 23.87a
P1 (10% corn Leaves)	356.83 ± 29.56b
P2 (10% seaweed)	302.17 ± 1.74c
P5 (15% corn leaves + 5% seaweed)	297.13 ± 14.02c
P3 (5% corn leaves + 15% seaweed)	273.53 ± 16.83d
P4 (10% corn leaves + 10% seaweed)	272.05 ± 27.98d

Description:

Values with the same letter superscript in the same column showed no significant difference ($p > 0.05$) based on the LSD follow-up test.

Based on the results presented in Table 3, multiple fingerprint analysis (ANOVA) showed that the addition of corn leaf flour and seaweed in the ration had a significant effect on the weight of broiler chicken carcass thighs ($p < 0.05$). This indicates that variations in the composition of the ration in each treatment can cause differences in the physiological response of broiler chickens, especially in the formation of thigh muscle tissue. The results of the LSD follow-up test showed that the P0 (commercial feed) treatment resulted in the highest thigh weight, which was 390.11 ± 23.87 g, and was significantly different from all other treatments. The P1 treatment with the addition of 10% corn leaf flour resulted in a thigh weight of 356.83 ± 29.56 g, which although lower than commercial feed, still showed better results and was significantly different from the treatment with a higher level of seaweed use. This shows that the use of corn leaf flour up to 10% can still support the growth of broiler chicken thigh muscles relatively optimally. The P2 (10% seaweed) and P5 (15% corn leaf + 5% seaweed) treatments resulted in relatively similar thigh weights, 302.17 ± 1.74 g and 297.13 ± 14.02 g, respectively, and were not significantly different from each other, but significantly lower than P0 and P1. Meanwhile, the P3 (5% corn leaves + 15% seaweed) and P4 (10% corn leaves + 10% seaweed) treatments showed the lowest thigh weights, which were 273.53 ± 16.83 g and 272.05 ± 27.98 g, respectively, and showed no noticeable difference between the two. As an opinion Mait *et al.*, (2019), which reported that an increase in coarse fiber sources in rations had a significant effect on the weight of carcasses and commercial cuts of broiler chickens, including thighs.

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Table 4. Flat weight of the back piece

Treatment	Back Weight (g)
P0 (commercial feed)	236.16 ± 28.39a
P1 (10% corn leaves)	223.14 ± 19.88a
P2 (10% seaweed)	166.42 ± 13.65b
P5 (15% corn leaves + 5% seaweed)	158.65 ± 39.08b
P4 (10% corn husks+ 10% seaweed)	151.47 ± 24.62b
P3 (5% corn leaves + 15% seaweed)	125.83 ± 11.45c

Description:

Values with the same letter superscript in the same column showed no significant difference ($p > 0.05$) based on the LSD follow-up test.

Based on the results presented in table 4, variety-fingerprint analysis (ANOVA) showed that the addition of corn leaf flour and seaweed in the ration had a significant effect on the weight of broiler chicken carcass back pieces ($p < 0.05$). This indicates that the difference in ration formulation in each treatment affects the growth and development of body tissues on the back of broiler chickens. The results of the LSD follow-up test showed that the P0 treatment (commercial feed) produced the highest back cut weight, which was 236.16 ± 28.39 g, and was not significantly different from the P1 treatment (the addition of 10% corn leaf meal) of 223.14 ± 19.88 g. The similarity of the letter superscript in the two treatments shows that the use of corn leaf flour up to 10% is still able to replace commercial feed without significantly reducing the weight of the back piece. Furthermore, P2 (10% seaweed), P5 (15% corn leaves + 5% seaweed), and P4 (10% corn leaves + 10% seaweed) treatments each resulted in a back weight of 166.42 ± 13.65 g; 158.65 ± 39.08 g; and 151.47 ± 24.62 g. The three treatments did not show any real difference from each other, but had a significantly lower back weight than the P0 and P1 treatments. Meanwhile, the P3 treatment (5% corn leaf + 15% seaweed) resulted in the lowest back cut weight, which was 125.83 ± 11.45 g, and was significantly different from all other treatments. The results of this study are in line with (Mandey *et al*., 2017), which reported that increased crude fiber levels in broiler chicken rations can reduce nutrient utilization efficiency, resulting in a decrease in carcass weight and carcass parts.

CONCLUSION

The addition of corn leaf flour and seaweed in the ration had a significant effect on the weight of broiler chicken carcass pieces ($P<0.05$) in all parts observed. On the other hand, the use

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of corn leaf flour and seaweed at a higher level tends to reduce the weight of carcass pieces, which results in an increase in the crude fiber content of the ration thereby reducing the efficiency of nutrient utilization

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