



ISSN: 2230-9926

Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research
Vol. 16 Issue, 01, pp. 69707-69712, January, 2026
<https://doi.org/10.37118/ijdr.30278.01.2026>



RESEARCH ARTICLE

OPEN ACCESS

IMPACT OF PARTIALLY REPLACING CORN WITH GROUND PEA (*Vigna subterranea*) ON BROILER RATION ON MEAT OBTAINED

*^{1,2}Randriamandratondrakotonirina, H. F. A., ¹Razafindramboa, C. G. and ²Rakotozandriny, J. N.

¹Higher Institute of Technology of Ambositra, Ex-Building Hodima Ankorombe Ambositra 306

²University of Antananarivo, Higher School of Agronomic Sciences, BP 175 Ankatso, Antananarivo 101, Madagascar, Doctoral School of Agriculture, Livestock and Environment, BP 175 Ankatso, Madagascar

ARTICLE INFO

Article History:

Received 18th October, 2025

Received in revised form

14th November, 2025

Accepted 19th December, 2025

Published online 30th January, 2026

Key Words:

Broiler Chicken, Ground Peas, Madagascar, Organoleptic Quality, Yield.

*Corresponding author:

Randriamandratondrakotonirina, H. F. A.,

ABSTRACT

The overall objective of this study is to analyze the effect of partial substitution of corn with ground pea on the quality of broiler meat obtained. As a methodology, three types of feed were formulated and tested on 45 *Arbor Acres* chicks, which were divided into three batches containing 15 individuals. In experimental batches T1 and T2, corn was substituted with 10% and 20% ground pea, respectively, and in the control batch, there was no corn substitution. During the trial, 4 categories of variables studied did not show any significant difference between the tested diets compared to the control at the 5% threshold concerning carcass yields ($p>0.05$), cut pieces ($p>0.05$) and organ ($p>0.05$). Four other parameters showed significant difference compared to the control on the yields of whole wings ($p=0.031$), feet ($p=0.0043$), gizzard ($p=0.002$), and abdominal fat ($p=0.0001$). These results indicate that part of the quantity of meat cuts is improved. The taste, color and smell of the meat of chickens treated with ground peas are improved compared to the control. In short, the consequence of substituting corn with ground peas is partially palpable on the quantity, but totally improves the organoleptic quality of the broiler meat obtained.

Copyright©2026, Randriamandratondrakotonirina et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Randriamandratondrakotonirina, H. F. A., Razafindramboa, C. G. and Rakotozandriny, J. N. 2026. "Impact of Partially replacing corn with ground pea (*Vigna Subterranea*) on Broiler ration on Meat Obtained". *International Journal of Development Research*, 16, (01), 69707-69712.

INTRODUCTION

The poultry sector continues to expand and industrialize in many parts of the world. In 2015, global poultry production reached 114.8 million tons, according to FAO estimates (FAO, 2016), and poultry farming contributes significantly to the fight against poverty in developing countries (Sourokou, 2014). Furthermore, it is a solution to meet the ever-increasing demand for animal protein in many tropical countries, particularly in Africa (Fofana et al., 2021). Despite its socioeconomic importance, poultry farming faces numerous constraints that hinder its development (Nmoula et al., 2012). Among these obstacles, feed represents a major constraint due to the progressive increase in the price of feed inputs, which leads to low productivity in poultry farms (Ouedraogo et al., 2015). This problem has led to a decrease in farmers' profits and increased their vulnerability. The rise in production costs has led researchers to develop alternative resources that are locally available and at lower cost. In order to reduce the use of corn, which has a very variable price depending on the season, other raw materials of plant origin have been the subject of research in chicken feed. These are ground peas, soybeans, cowpeas, Mucuna, field beans and *Azolla* (Mombo, 2006; Deepesh et al., 2016; Becha and Bouaba, 2022). Among these local food resources, the use of ground peas (*Vigna subterranea*) is interesting thanks to its rich nutritional value such as protein, essential amino acids, vitamins and mineral salts (Amarteifio et al., 2006;

Ndiang et al., 2012; Seraphin et al., 2015). Its use in poultry feed in Burkina Faso does not have negative effects on food consumption and promotes good growth of the animal (Ouedraogo et al., 2022). Ground peas are used by some breeders in Madagascar in other animal breeds, but without well-determined scientific precision in terms of quantity used and yield obtained. This species is also used in Cameroon to address human malnutrition (Adji et al., 2018). The objective of this study is to analyze the effect of partial substitution of corn by ground pea (*Vigna subterranea*) on the quantity and quality of broiler meat obtained.

MATERIALS AND METHODS

Study Site: The study was conducted in the Fokontany of Ambohimpiaonana in the Suburban Zone of Betafo. The commune is part of the Vakinankaratra Region. It is located between 46°51' and 23°22' West longitude, 19°50' and 18°26' South latitude, and is 22 km west of the city of Antsirabe. It is a high-altitude city situated more than 1,400 m above sea level. According to its climatic characteristics, Betafo enjoys a sub humid climate with an annual rainfall between 1,000 mm and 1,500 mm, and a slightly cold temperature below $\pm 5^{\circ}\text{C}$. The climate is tropical at altitude, characterized by two distinct seasons: the hot and rainy season from October to April and the dry and cool season from May to September,

which favors field activities (CREAM, 2013). The trial was conducted for 35 days of rearing from July 3 to August 6, 2023.

Characteristics of the inputs used: The manufacture of feed was carried out one week before the arrival of the chicks. The raw materials (dry corn grain, dry ground pea grain (*Vigna subterranea*), peanut cake, PSA concentrate / CD16 for growth and CCF16 for finishing) were broken using a grinding machine. The ground peas were roasted before grinding to eliminate the antinutritional factors they contain. Roasting was conducted at 120 °C for 20 minutes. Subsequently, the raw materials were mixed to obtain a homogeneous composition in accordance with the established food formulations (Table 1). The mixing process involved spreading the raw material present in the largest quantity on a clean, smooth cemented floor, followed by the gradual addition of the remaining ingredients in decreasing order of quantity. The resulting mixture was then granulated using a machine.

Equipment and Livestock Building: The livestock farm was housed in a brick-walled building with cement plaster, a flagstone floor, a sheet metal roof, and a pine wood ceiling. The building had a window and a door for ventilation and daylighting. This building had a surface area of 12 m² and was divided into three groups. Each group had an identical surface area of 4 m² for the groups of animals measuring 2 m x 2 m. The brooding circle was enlarged according to the growth of the animals. The groups were separated by cardboard walls. Each group had a homemade coal-fired heating system made of clay, a homemade pine wood feeder, a plastic waterer, and a thermometer.

Experimental Design: A trial was conducted to test the effect of partially substituting corn for peas. The study used a "Completely Randomized Block Design" design. It involved 45 unsexed one-day-old chicks of the *Arbor Acres* or "*Super Mafonja Plus*" strain, randomly divided into three batches corresponding to the number of treatments, differentiated by the amount of ground peas contained in each prepared diet. Each batch had 15 individuals, considered as the number of replicates. Batch T1 received a diet containing 10% ground peas. Batch T2 was treated with a ration containing 20% ground peas. The control batch was fed a diet without ground peas, with no corn replacement. The chickens were raised under controlled conditions, with constant feed and water available ad libitum.

Animal Slaughter: To determine the effect of ground peas on the characteristics of carcasses, cuts, and organs, the five individuals per batch were slaughtered on day 45 of rearing. At this time, the animals were weighed. During the slaughter, the chickens are bled by severing the neck vessels and are skinned and eviscerated immediately afterward. The liver, heart, and fat are then removed and weighed. The liver is weighed along with the gallbladder. The carcass weight is measured immediately after evisceration.

Data Collection: At the end of the rearing period, the experiment was extended to sensory analysis. The evaluation was conducted with 30 individuals of different sexes, including 15 men and 15 women. These were informed consumers of the food being evaluated. They received explanations to ensure they fully understood the test. The chicken pieces to be tasted were cooked in water (boiled) and oil (fried) until cooked. The evaluation tests were conducted in a ventilated room away from all odors as well as auditory and visual distractions. The samples are coded with numbers from 1 to 3. Tasters must rinse their mouths with water before and between two samples. Communication between tasters is prohibited during the duration of the evaluation. Their observations were noted on a tasting sheet for the taste analysis, but for the other factors, they are examined using the sense organs: sight and smell. And from the sensation was performed the scoring. The scoring criteria are explained to the evaluators before the start of the test. The scores to be awarded are between 0 and 5. To do this, each taster has a scoring sheet prepared in advance.

Calculation of yields: To assess the meat content of broiler chickens, the following different yields were calculated: carcass yield, cuts, organs and fat (Kon *et al.*, 2022):

- *Carcass yield*

$$\text{Carcass Yield} = \frac{\text{Carcasse weight}}{\text{Live weight}} \times 100 \quad (1)$$

- *Yield of cutting pieces*

$$\text{Piece Yield} = \frac{\text{Weight of piece considered}}{\text{Live weight}} \times 100 \quad (2)$$

- *Organ yield*

$$\text{Piece Yield} = \frac{\text{Weight of organ considered}}{\text{Live weight}} \times 100 \quad (3)$$

- *Fat yield*

$$\text{Fat Yield} = \frac{\text{Fat weight}}{\text{Live weight}} \times 100 \quad (4)$$

Statistical Analysis: The data were processed using a one-way analysis of variance (ANOVA). Comparisons of batch means were performed using "All Pairs Tukey Kramer HSD" at the significance levels of 0.05, 0.01, and 0.001. JMP/SAS software version 11.0.0 was used for statistical analysis.

RESULTS

Effect on Carcass and Fat Yields after Chicken Slaughter: At the end of the trial, five chickens were randomly selected from each batch for slaughter. They were weighed before bleeding. Table 2 illustrates the meat and fat yields of the chickens. At the end of the trial, carcass yield and subcutaneous fat showed no significant differences ($p > 0.05$) between treatments. Abdominal fat yield showed a significant difference between groups. Group T1 (10% ground peas) produced a higher yield ($4.29 \pm 0.47\%$). Group T2 (20% ground peas) had an intermediate yield ($2.95 \pm 0.60\%$). The control group (without ground peas) had a lower abdominal fat yield ($2.15 \pm 0.23\%$). According to the analysis of variance, there was a significant difference ($p < 0.05$) between treatments. Overall, the incorporation of ground peas in the diet of meat chickens did not affect carcass yield, but increased abdominal fat yield.

Effect on Chicken Cutout Return: The effect of ground peas on meat cuts is highly variable. There was no significant difference ($p > 0.05$) in the return of thigh, fillet, neck and head. On the other hand, the returns of whole wing and leg showed a significant difference ($p > 0.05$) between the treatments. Indeed, batch T2 had a higher whole wing yield ($9.00 \pm 0.30\%$). Batch T1 had an intermediate yield ($8.32 \pm 0.12\%$) which in turn had a yield identical to that of the control ($8.49 \pm 0.54\%$). According to the analysis of variance, there was a significant difference ($p < 0.05$) between the wing yield of batch T2 and the control batch. Regarding the organs obtained, the yields of the intestine, liver, and heart did not show any significant difference ($p > 0.05$) between the treatments. Among the organs observed, the gizzard yield showed a significant difference ($p < 0.05$) between the tested batches. Indeed, batch T1 gave a higher gizzard yield ($2.24 \pm 0.37\%$). Batch T2 had a lower yield ($1.61 \pm 0.21\%$), which in turn was identical to that of the control batch ($1.45 \pm 0.24\%$). In summary, the substitution of corn with ground peas resulted in an increase in chicken gizzard weight and yield, while other organs such as the intestine, liver, and heart remained unchanged.

Effect on Chicken Meat Taste: The descriptor ratings for this analysis are rated from 1 to 5. Figure 1 shows the average ratings given by the tasters. From this figure, chicken meat from batch T2 treated with 20% ground peas received a higher average rating (score 4), and batch T1 received an average rating (score 3.47). Chicken meat from the control batch without ground peas received a lower rating (score 2.33). Therefore, animals fed ground peas tend to have very good flavor. Therefore, as the amount of ground peas increases, the meat tastes better. In summary, substituting corn for ground peas in feed improves the taste of broiler meat.

Meat color and odor preference: The effect of ground pea distribution on meat characteristics is shown in Figure 2 below.

Table 1. Food composition of each diet

Raw materials	Growth Period (11-21 d)			Finishing Period (22-45 d)		
	Control	T1 (10%)	T2 (20%)	Control	T1 (10%)	T2 (20%)
Corn (%)	55	45	35	59	49	39
Ground peas (%)	0	10	20	0	10	20
Peanut cake (%)	10	10	10	9	9	9
CD 16 Concentrate (%)	35	35	35	0	0	0
CCF 16 Concentrate (%)	0	0	0	32	32	32
Total (%)	100	100	100	100	100	100

GP: Ground peas, T1: Treatment with diet containing 10% ground peas, T2: Treatment with diet containing 20% ground peas, Control: treatment with diet without ground peas.

Table 2. Average yield of carcass, abdominal and subcutaneous fat

Parameter considered	Process			Pr >F	Meaning
	T1 (10%)	T2 (20%)	Control (0%)		
Live weight (g)	2314,46 ^b ±58,67	2516,73 ^a ±35,66	2188,86 ^c ±37,61	<.0001	***
Carcass (%)	82,14 ^a ± 1,72	84,02 ^a ± 2,79	81,50 ^a ± 1,06	0,15	NS
Abdominal fat(g)	4,29 ^a ±0,47	2,95 ^b ±0,60	2,15 ^c ±0,23	<.0001	***
Subcutaneous fat(g)	0,48 ^a ±0,12	0,53 ^a ±0,12	0,48 ^a ±0,14	0,78	NS

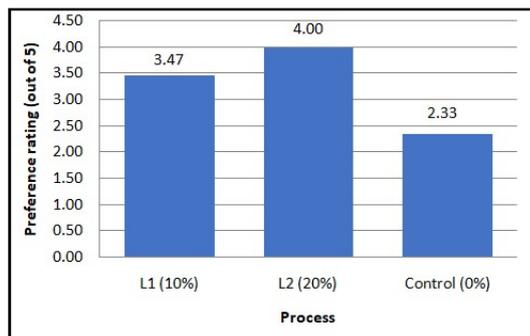
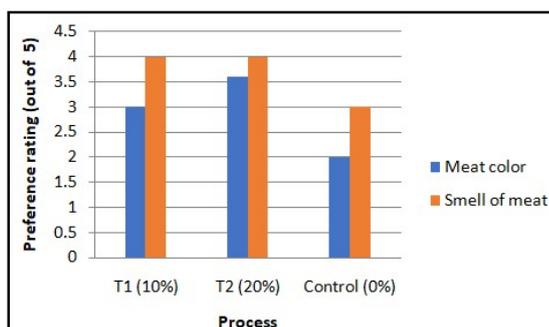
a, b and c: In the same row, the values assigned the same letter are not significantly different ($P > 0.05$). NS: not significant, ***: Significant at $p < 0.001$, T1: treated with 10% ground peas, T2: treated with 20% ground peas, Control: treated with the diet without ground peas.

Table 3. Chicken Cut Piece Yield

Organes	Process			Pr >F	Meaning
	T1 (10%)	T2 (20%)	Control (0%)		
Intestine (%)	9,93 ^b ± 1,00	11,15 ^a ±0,56	9,99 ^a ±0,78	0,056	NS
liver (%)	1,90 ^a ±0,28	1,58 ^a ±0,13	1,65 ^a ±0,30	0,14	NS
Gizzard (%)	2,24 ^a ±0,37	1,61 ^b ±0,21	1,45 ^b ±0,24	0,002	**
Heart(%)	0,57 ^a ±0,11	0,53 ^a ±0,10	0,55 ^a ±0,08	0,83	NS

a, b and c: In the same row, the values assigned the same letter are not significantly different ($P > 0.05$). NS: not significant, **: Significant at $p < 0.01$, T1: treated with 10% ground peas, T2: treated with 20% ground peas, Control: treated with the diet without ground peas.

The categorical change of corn in poultry diets led to differences in meat color and odor compared to the control. The color of chicken meat was quite remarkable, with very specific differences. From a table perspective, chicken meat fed with compound feed containing 20% ground peas had the highest average score (average score: 3.6) because it was very close to red meat. However, the meat of chickens from batch 1 treated with 10% ground peas in the feed also showed a color that was considerably close to red (average score: 3.0).

**Figure 1. Mean taster preference scores for meat taste****Figure 2. Average color and odor score of chicken meat**

Certainly, the chicken meat fed a ration without ground peas but containing 100% PSAA remained identical to the white meat sold at the market. Ground peas also altered the color of poultry meat. Regarding the odor of broiler meat, chickens from the experimental ration with a proportion of 10% and 20% ground peas exhibited a considerably more appreciable odor (average score: 4.0) compared to the control. The latter had a moderately good odor with an average score of 3.0 compared to those from the other batches (Figure 2). In short, the addition of ground peas to the chickens' diet improves the odor of their meat.

DISCUSSION

Effect on Carcass Yields and Fat Content after Chicken Slaughter: The carcass yields of chickens varied depending on their live weight at slaughter age. The carcass yield of animals fed the diet containing 20% ground peas was apparently higher (84.02%) than those of the other groups (T1 and Control). According to the analysis of variance, no significant difference ($P > 0.05$) was recorded in the carcass yield of chickens among the three groups. This indicates that the carcass yields of the three treatments were homogeneous. This observation is consistent with the consequence of a previous research using turmeric rhizome powder as a feed additive on growth performance and carcass characteristic of broiler chickens equal to $83.48 \pm 54.44\%$ (Ouedraogo *et al.*, 2021) and the research result of a trial of supplementation of dried *Azolla pinnata* in broiler feed (Becha and Bouaba, 2022) which observed that *Azolla* supplementation up to 20% has no adverse effect on hot carcass. This result in this study is higher than a yield of 81.63% recorded during a research concerning the effect of the incorporation of boiled Guinea sorrel seeds (*Hibiscus sabdariffa*, L) in rations on the growth performance of broiler chickens in Burkina Faso (Ouedraogo *et al.*, 2021) and the value found in another research consequence concerning the influence of rations incorporating mango feed and maggots concentrate as a replacement for corn and fish meal on the growth performance and carcass quality of broiler chickens which obtained a carcass yield of $79.2 \pm 0.9\%$ (Ouedraogo *et al.*, 2022). The difference may be due to

the quality of raw material used and showing the superiority of ground peas compared to guinea sorrel grain and mango feed and maggot concentrate. The amount of protein in the diet is enhanced by the presence of essential amino acids associated with fatty acids and vitamins in the peas, which are necessary elements for animal growth in order to achieve good carcass yield. However, the yield found in this study is lower than the research result regarding the incorporation of hibiscus seed in broiler feed with a carcass yield equal to 85.74% (Sourokou, 2014). In this case, hibiscus grain is even better than peas in achieving good broiler yield. Regarding the amount of fat, it was found in the test that animals from diets containing hibiscus (T1 and T2) had a higher amount of fat (4.29 ± 0.49 g and 2.95 ± 0.60 g respectively) than the control group (2.15 ± 0.23 g). The abundance of fat in the meat is caused by the amount of oil in the chicken feed. This result is explained by the richness in fatty acids in the diet provided by the ground pea. The high fat content reduces the carcass yield because lean meat weighs more than fatty meat (Ouedraogo *et al.*, 2022). This consequence is the origin of the equality of yield between the tested diets. Because even if the growth is better for chickens consuming ground peas, the fat formed still reduces the carcass weight which becomes still light and identical with the control batch. Whereas the substitution of corn by ground pea results in fatter meat consequently reducing the carcass yield of broiler chickens.

Effect on Chicken Cutting Yield: In this study, the results suggest no significant difference in cut-off portions (thigh, fillet, tail, head) between the experimental groups and the control. The lack of significant difference in cut-off portion yields between the rations indicates that the inclusion of pea-based diets did not have a depressing effect on chicken growth. Furthermore, these types of cut-off portions do not allow us to detect the effectiveness of incorporating peas into the chicken diet on the meat yield obtained. However, the results showed a significant difference in whole wing yield in favor of group T2 treated with 20% peas. The protein and amino acid content of the pea-based diet stimulated muscle development in the chicken wing. This consequence is justified by the results of previous research indicating that the nature of feed intake helps control the growth and body composition of poultry (Kone Yelakan *et al.*, 2022; Ouedraogo *et al.*, 2021; Ouedraogo *et al.*, 2022; Tesseraud *et al.*, 2014). In this trial, the highest yield recorded is $9.00 \pm 0.30\%$. This result is higher than the consequence found in a previous research concerning the effect of the level of incorporation of cassava flour in the ration on the growth performance of broiler chickens which obtained a wing yield equal to $8.33 \pm 0.24\%$ (Mafouo *et al.*, 2010). The difference may be due to the amount of protein and amino acid provided by the diet distributed because these elements are in significant quantity in the ground pea. In short, the partial substitution of corn by ground pea makes it possible to improve the yield of whole wing of broiler chicken.

Effect on Chicken Organ Yield: In this study, no significant difference was found in the viscera (intestine, heart, and liver) content between the batches. The lack of difference observed between the liver weights of the experimental batches and that of the control batch shows that the raw materials used do not pose a risk to liver health. This is because the liver is generally the organ most affected when consuming a toxic feed. The results showed that only the gizzard yield showed a difference between the tested batches. Batch T1 treated with 10% ground peas had a higher gizzard yield compared to the control batch, with a significant difference. This could be explained by the fact that the chickens treated with ground peas had a higher consumption level of more fibrous and therefore coarser feed than the animals in the control batch. According to the result of previous research, the consumption of coarse feed stimulates the weight development of the gizzard (Yo *et al.*, 1994). Consequently, the distribution of roasted ground peas in the amount of 10% to 20% improves the appetite of chicken and promotes the development of chicken gizzard. In this trial, the highest gizzard yield recorded is $2.24 \pm 0.37\%$. This value is higher than the result obtained in a previous study using faba bean in chicken feed which recorded a gizzard yield equal to 1.59% (Beghoul, 2015). This difference may be due to the diversity of feed distributed to the animals especially the

amount of fiber contained in the diet. In summary, the incorporation of ground peas in the diet also induces a positive effect on the quantity of the gizzard of broiler chicken. In addition, the absence of significant difference in the weights of the different organs between the rations indicates that the incorporation of pea-based foods did not have a depressive effect on their development.

Color, Odor, and Flavor Preference of the Obtained Chicken Meat: The effect of the presence of ground pea on the quality of broiler meat was different from that of the control. As with meat taste, chickens fed experimental rations had better-tasting meat than those of the control animals. This indicates that the presence of ground pea flour in chicken feed improves their meat quality. According to previous research, good diet control (good formulation and balanced diet at the lowest cost) ensures maximum chicken growth and better meat quality (Lebret *et al.*, 2015; Bourin *et al.*, 2013). Regarding meat color and odor, the experimental feeds given to animals in batches 1 and 2 modified the color and odor of the meat. After slaughter, the color comparison allowed us to notice that the meat from animals treated with ground peas was much redder than from the control. Obtaining this red color indicates the best quality of the meat obtained (Beaza *et al.*, 2022). On the other hand, the color of the meat depends on the freshness of the food. The main pigment responsible for the color of the meat is myoglobin which is a chromoprotein (Benatmane, 2012). While the protein-rich ground pea reforms the color of the flesh obtained which is the origin of the color much redder than the control. On the other hand, the meat from chickens treated with ground peas showed a mild odor compared to the control. This means that the nutritional values contained in the ground pea have changed the quality of the chicken meat towards the quality appreciated by the consumer (Kone Yelakan *et al.*, 2022).

According to previous research, the aroma and flavor are partly due to the amino acids and fatty acids offered by the diet (Solms, 1969). In this study, the distributed ground pea is rich in fatty acid, protein and essential amino acid. While this nutrient richness in the ground pea is the origin of this good color, smell and flavor of the chicken meat obtained. An analysis result is similar to this test with protein-based feed (cashew husks) regarding the evaluation of the organoleptic quality of broiler meat. The observation of chicken meat showed that cashew husks improved the color and flavor of the meat. While these parameters increase proportionally with the rate of incorporation of husks in the broiler ration (Fofana, 2021). In short, the incorporation of ground pea in chicken feed leads to an improvement in the organoleptic quality appreciated by consumers as a quality product or label meat. One of the requirements for the production of red label meat is the presence of 75% cereals and without flour or animal fat in the feed (Beaumont *et al.*, 2004). Therefore, ground pea is one of the effective raw materials for this specific type of production. Besides the diet, the quality of meat regarding tenderness, color, taste, juiciness and nutritional value provided depends greatly on the breed raised (Beaza *et al.*, 2022) and the age of slaughter (Tougan *et al.*, 2013; Marchewka *et al.*, 2022). This study partially modifies the quantity of meat obtained. On the other hand, this method of substituting corn with ground peas improves the quality of meat in terms of taste, color and smell. In addition, this study provides an enrichment of knowledge for producers during the formulation of feed for broiler chickens by promoting ground peas which is a product with a stable and expensive price. It helps to reduce dependence on corn with a very variable cost, but values the agricultural product available continuously and at a reasonable price. While this product leads to the improvement of the profitability of the breeding farm and raises the competitiveness of farmers. For consumers, it allows to multiply the supply of quality meat to the market by improving organoleptic characteristics.

CONCLUSION

The development of poultry farming is hampered by economic constraints caused by the rising price of raw materials used in animal feed, which increases farm vulnerability. These problems have

prompted experts to focus research on the development of continuously available and low-cost resources, such as ground peas. The objective of this study was to analyze the effect of partially substituting corn with ground peas (*Vigna subterranea*) on the quantity and quality of broiler meat obtained. Dried ground pea grains can be used as a source of protein, essential amino acids, carbohydrates, fatty acids, cellulose, energy, vitamins, and minerals in broiler feed. During the trial, four types of parameters studied showed no significant difference between the tested diets and the control at the 5% threshold regarding carcass yields ($p>0.05$), cuts ($p>0.05$), and organs ($p>0.05$). Four parameters showed significant differences compared to the control regarding whole wing yields ($p=0.031$), gizzard yields ($p=0.002$), feet yields ($p=0.0043$), and abdominal fat yields ($p=0.0001$). This indicates that meat quantity is partially improved. The taste, color, and odor of the meat from chickens treated with ground peas are improved compared to the control. In short, the effect of substituting corn for ground peas is partially palpable on the quantity, but completely improves the organoleptic quality of the broiler meat obtained.

REFERENCES

- Adji F. A., Chantal M., Djakissam W. & Tinkeu N. L.S.(2018). Formulation d'un aliment de complément à base du voandzou (*Vignasubterranea* (L.) Vercourt (1980) pour relever la dénutrition dans l'Extrême-Nord du Cameroun. *Journal of Applied Biosciences* 123 :12379-12387. ISSN 1997-5902.
- Amarteifio J. O., Tibe O., Njogu R. M. (2006). The mineral composition of bambaragroundnut (*Vignasubterranea* (L.) Verdc) grown in Southern Africa. *African Journal of Biotechnology*. 5: 2408-2411.
- Beaumont C., Le Bohan-Duval E., Juin H., Magdelaine P.(2004). Productivité et qualité du poulet de chair. *Anim. 17(4): 265-273*
- Beaza E., Guiller L. and Petracci M.(2022). Production factors affecting poultry carcass and meat quality attributes. *Animal*, 16 100331.
- Becha S. et Bouaba S. (2022). Essai de supplémentation de l'*Azollapinnata* séchée en alimentation du poulet de chair. Mémoire de Master en Sciences Agronomiques, Université Mouloud Mammeri de Tizi-Ouzou. 118 pp.
- Begoul S. (2015). Effets de l'utilisation des céréales et des protéagineux autres que le maïs et le soja dans l'alimentation du poulet de chair. 177 pp. <http://archives.umc.edu.dz/bitstream/handle/123456789/130682/BEG6667>
- Benatmane. (2012). Impact des aliments enrichis en acides gras polyinsaturés n-3 sur les performances zootechniques et la qualité nutritionnelle des viandes : cas du poulet de chair. Thèse de doctorat en sciences Agronomiques. Faculté des sciences biologiques et des sciences agronomiques Département des sciences Agronomiques. 259 pp.
- Bourin M., Guardia S., Bignon L., Mercierand F., Berri C. (2013). What innovative farm systems for intermediate "certified" meat-type chicken? Eur. Symp. Quality Poult. Meat, Bergamo, Italy. 4pp.
- CREAM. (2013). Monographie Région Vakinankaratra. 169 pp.
- Deepesh B. M., Debashis R., Vinod K., Amitav B., Muneendra K., Raju K. and Shalini V.(2016). Effect of feeding different levels of *Azollapinnata* on blood biochemicals, hematology and immunocompetence traits of Chabro chicken. Available at www.veterinaryworld.org/Vol.9. pp.192-198. Retrieved on March 8, 2024.
- FAO. (2016). Les avantages nutritionnels des légumineuses. Nutrition. 2 pp.
- Fofana D., Diomande M., Koulibaly A., Koko A., Bohoua L. (2021). Qualité sensorielle de la viande des poulets de chair nourris aux pellicules de cajou (*Anacardium occidentale*) comme substitut du son de blé en côte d'ivoire. pp. 2-10.
- Haefell R. J. & Glaser D. (1990). Taste response and thresholds obtained with the primary amino acids. In: *human lebensmwiss technology* 23: 523 – 527.
- Kato H., Rhue M. R. & Nishimura T. (1989). Role of free amino acids and peptides in food taste. In Flavor chemistry: trends and development, chap 13, (R. Teranishi, R.G. Buttery, F. Shahidi, eds). *American Chemical Society, Washington*. 159-174.
- KoneYelakan K. C., Koffi A. R., Bohoua L. G. (2022). Qualité des carcasses et propriétés organoleptiques des viandes de poulets de chair (Arbor) et de poulettes (Warren) nourris avec des aliments démarrages et croissances reformulés. *International Journal of Progressive Sciences and Technologies (IJPSAT) vol 34 N°2:524-533 ISSN 2509-0119*.
- Lebret B., Prache S., Berri C., Levevre F., Bauchart D., Picard B., Corraze G., Medale F., Faure J., Alami-Durante H. (2015). Qualités des viandes : influences des caractéristiques des animaux et de leurs conditions d'élevage. *INRA Prod. Anim.* 28 (2): 151-168.
- Mafouo N. H., Tegua A., Kana J. R., Mube H. K. et Diarra M.(2010). Effet du niveau d'incorporation de la farine de manioc dans la ration sur les performances de croissance des poulets de chair. *Livestock Research for Rural Development. Volume 22, Article #214. Retrieved December 2010, from http://www.lrrd.org/lrrd22/11/mafo22214.htm* Retrieved on February 20, 2025.
- Marchewka J., Standarski P., Solka M., Louton H., Rath K., Vogt L. et Horbanczuk J. O.(2022). Linking key husbandry factors to the intrinsic quality of broiler meat. *Poultry science*, 102384.
- Mombo N. (2006). L'influence de la substitution du maïs par le niébé sur les performances de croissance du poulet de chair en milieu tropical sec. 96 pp.
- Mottram D. S. (1998). Flavour formation in meat and meat products: a review. *Food Chemistry* 62: 415-424.
- Muir P. D., Smith N. B., Wallace G. J., Cruickshank G. J. & Smith D. R. (1998). The effect of short-term grain feeding on live weight gain and beef quality. *New Zealand Journal Agricultural Research* 41: 517-526.
- Ndiang Z., Bell J. M., Missouf A. D., Fokam P. E., Amougou A.(2012). Etude de la variabilité morphologique de quelques variétés de voandzou [*Vignasubterranea* (L.) Verdc] au Cameroun, *journal of Applied Biosciences* 60: 4410– 4420.
- Nmoula N., Detiffe N., Farnir F., Antoine-Moussiaux N., Leroy P.(2012). Aviculture familiale au Bas-Congo, République Démocratique du Congo (RDC). *Livestock Research for rural development*, 24 (5) : 760 – 764.
- Ouedraogo B., Bayala B., Zoundi S. J., Sawadogo L.(2015). Caractéristiques de l'aviculture villageoise et influence des techniques d'amélioration sur ses performances zootechniques dans la province du Sourou, Région Nord-Ouest Burkinabè, *Int. J. Biol. Chem. Sci.*, 9 (3): 1528 - 1543. DOI: <http://dx.doi.org/10.4314/ijbcs.v9i3.34>
- Ouedraogo B., Henri K., Siribi J. (2022). Effet de l'incorporation de farine de graine de Voandzou (*Vignasubterranea*) grillés dans les rations alimentaires sur les performances de croissance des poulets de chair dans l'élevage traditionnel amélioré au Burkina Faso. pp. 75-84.
- Ouedraogo B., Sanou J., Nikiema Z. S., Zoundi S. J.(2021). Effet de l'utilisation de la poudre de rhizome de curcuma comme additif alimentaire sur les performances de croissance et les caractéristiques de la carcasse des poulets de chair. *Journal of Applied Biosciences. Vol 163 : 16820-16833. ISSN 1997-5902*.
- Ouedraogo B., Zoundi S. and Sawadogo L. (2021). Effet de l'incorporation des graines d'oseille de Guinée (*Hibuscussabdarifa*, L) bouillies dans les rations sur les performances de croissance de poulets de chair au Burkina Faso, *Afrique Science* 18(2):42-55 ISSN 1813-548X <http://www.afriquescience.net> Retrieved on February 20, 2025
- Ouedraogo I. Z., Kiendrobeogo I., Millago X. D., Sawadogo D. P., Koara H. et Bougouma-Yameogo V. M. C.(2022). Influence de rations incorporant des provendes de Mangues et un concentré d'asticots en remplacement au maïs et à la qualité des carcasses de plantes de chair « Poulet de Faso ». *Rev. Ivoir. Sci. Technol.* 39 :147-166. ISSN 1813-3290, <http://www.revist.ci>. Retrieved on February 20, 2025

- Séraphin D. K., Youssouf K. K., Doudjo S., Emmanuel A N., Benjamin Y. K., Dago G.(2015). Caractérisation biochimique et fonctionnelle des graines de sept cultivars de Voandzou (*Vignasubterranea (L.) verdc. Fabaceae*) cultivés en côte d'Ivoire. *EuropeanScientific Journal September 2015 edition vol.11, No.27* : 288-304.
- Solms J. 1969. The taste of amino acids, peptides and proteins. *Journal of Agricultural and Food Chemistry.17*: 686- 688.
- Sourokou S. S. (2014). Performance zootechnico-économique des poulets de chairs (COBB55) nourris à base de la farine des grains de la variété verte de bissap (*Hibuscusheptdaripha*) LNN au Sénégal. Thèse, Université Cheik Anta Diop de Dakar. 107 pp.
- Tesseraud S., Bouvarel I., Fraysse P., Metayer-Coustard S., Collin A., Lessire M., Berri C. (2014). Optimiser la composition corporelle et la qualité des viandes de volailles en modulant le métabolisme par les acides aminés alimentaires. *INRA Prod. Anim. 27* : 337-346.
- Tougan P.U., Dahouda M., Salifou C.F.A., Ahounou S. G. A., Kpodekon M. T., Mensah G. A. et Karim I. Y.(2013). Conversion of chicken muscle to meat and factors affecting chicken meat quality.A review *International Journal of Agronomy and Agricultural Research. 3(8)*: 1-20.
- Yo T., Picard M., Guerin H., Dauvilliers P.(1994). Alimentation séparée (céréales graines entières + aliment complémentaire granulé) chez les poulets de chair en climat chaud. *Revue Elev. Méd. vét. Pays trop. Vol. 47 (3)*: 319 – 327.
