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Evaluation of Feed Management and Nutritional Adequacy in Alope Chicken Maintenance at Bukit Bahagia Farm

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Abstract

This study aimed to evaluate feed management practices and the nutritional adequacy of diets provided to grower-phase Alope chickens at Bukit Bahagia Farm, Barru Regency, South Sulawesi. Feed management and nutritional adequacy are essential factors influencing the growth, health, and productivity of Alope chickens, yet farm-level information on these aspects remains limited. The study was conducted over a two-week period in May 2026 using a descriptive-evaluative method with a case-study approach. Data were collected through direct observation and structured interviews with the farm owner. The nutrient composition of the ration was calculated using feed composition tables from the literature and compared with the nutritional requirements for local breeder-grower chickens according to the Indonesian National Standard (SNI 7783-2:2022). The ration consisted of rice bran (66.67%), yellow corn (16.67%), and layer concentrate (16.67%) and was provided twice daily at inconsistent times (approximately 08:00-09:00 and 17:00-18:00). The daily feed allowance reached 266.67 g/bird/day, exceeding the recommended 80-100 g/bird/day. Crude protein (13.25%) and metabolizable energy (2,053 kcal/kg) were below the standard, while crude fiber (13.25%) and calcium (1.52%) exceeded the recommended limits; available phosphorus (0.30%) was at the minimum standard, and crude fat (4.92%) met the standard. These imbalances were consistent with field observations of feather loss in 20-30% of the chickens and several cases of weak bones. Feed management and ration composition at Bukit Bahagia Farm did not fully meet the nutritional requirements of grower-phase Alope chickens. Reformulating the ration by reducing rice bran, increasing corn and high-quality protein sources, and adding vitamin-mineral premix, phytase, and synthetic amino acids is recommended to improve nutritional adequacy, health, and productivity.

Keywords: *alope chicken; feed management; nutritional adequacy; nutritional requirements*

1. BACKGROUND

Native chickens are an important source of animal protein with considerable economic and social value in Indonesia. They are preferred for their distinctive taste and meat quality, which are often considered more natural than those of broiler chickens. However, the productivity of native chickens generally remains relatively low in terms of both growth and feed efficiency. Therefore, improvements are needed through breeding programs and the implementation of better management practices (Edowai et al., 2019). One outcome of such development is the Alope chicken, a selected local chicken strain developed by the Faculty of Animal Science, Hasanuddin University, to achieve faster growth without reducing adaptability to tropical environments (Tunnisa et al., 2024).

The success of Alope chicken farming is determined not only by genetic factors but also by management, particularly feed management. Feed is the largest production cost in poultry farming and can account for 60-70% of total production costs. Therefore, effective feed management significantly influences productivity and farm profitability (Jha & Mishra, 2021).

In addition to management, adequate nutrition is crucial for supporting chicken growth performance. Key nutrients include protein, energy, fat, crude fiber, vitamins, and minerals. The balance between energy and protein strongly influences feed intake and weight gain (Lisnahan, 2018).

Bukit Bahagia Farm, located in Barru Regency, intensively raises approximately 175 Alope chickens. The birds are fed a ration formulated by the farmers, and the feeding system is still based largely on routine practice rather than a standardized schedule and defined nutritional requirements. The farmers have not previously evaluated the nutritional composition of the ration; therefore, it is not known with certainty whether the levels of protein, energy, and other nutrients meet the requirements of Alope chickens during the current rearing phase. Inadequate nutrient composition can result in poor growth and reduced farm efficiency (Kidd et al., 2021). Research on Alope chickens has primarily focused on genetics, phenotypic characteristics, and growth performance, while information on farm-level feed management and nutritional adequacy remains limited. This study therefore aimed to evaluate the applied feed management practices, determine the nutrient composition of the ration, and assess nutritional adequacy in grower-phase Alope chickens at Bukit Bahagia Farm.

2. METHODOLOGY

2.1 Study Location

This study was conducted over two weeks in May 2026 at Bukit Bahagia Farm, Barru Regency, South Sulawesi Province. A descriptive-evaluative design with a case-study approach was used to describe and assess the existing feed management practices and the nutritional composition of the ration, and to compare them with relevant standards and recommendations from the literature. No experimental treatment was applied to the chickens; all data were obtained through direct observation, structured interviews with the farm manager, and daily records of the amount of feed provided.

The research object was the feed and ration management system for grower-phase Alope chickens. The farm had a total population of approximately 175 chickens, of which 75 were in the grower phase. Primary data were obtained through direct observation of feeding practices, including feed ingredients, feeding time, frequency, and quantity, as well as in-depth interviews with the farm manager. Secondary data were obtained from internal farm records and scientific literature, including poultry journals and feed-ingredient composition tables.

2.2 Calculation of Ration Nutrient Content

The nutrient content of the farmer-formulated ration was calculated by multiplying the proportion of each feed ingredient by its nutrient value obtained from feed composition tables in the literature, using the formula: Nutrient content of ration = Σ (Proportion of feed ingredient i × Nutrient content of feed ingredient i). The nutrients evaluated included crude protein (CP), metabolizable energy (ME), crude fat (CFat), crude fiber (CF), calcium (Ca), and available phosphorus (P). The calculated values were then compared with the nutritional requirements for local grower breeder chickens according to SNI 7783-2:2022 to determine whether each nutrient was within, below, or above the standard range.

2.3 Evaluation of Feed Management

Feed management was evaluated by comparing field practices, including feed type, feeding time, frequency, quantity, and storage methods, with recommendations from relevant local poultry journals and books. The data were analyzed descriptively and comparatively, and the results were presented in comparative tables and narrative form.

3. RESULTS AND DISCUSSION

3.1 General Description and Feed Composition

Bukit Bahagia Farm is an integrated agribusiness located in Sepe'e Village, Barru District, Barru Regency, combining livestock, fisheries, agriculture, and education activities. The feeding system in the livestock unit had been implemented for approximately 10 months, and the farmers had changed the feed composition several times depending on ingredient availability. The farmers had not yet received extension services regarding standard feed requirements for local chickens or methods for calculating the nutrient content of mixed rations. Observations and interviews showed that the ration consisted of three feed ingredients mixed in batches of 300 kg, as presented in Table 1.

Table 1. Feed Ingredient Composition of the Ration at Bukit Bahagia Farm

No.	Feed Ingredient	Amount (kg)	Proportion (%)	Notes
1	Rice bran	200	66.67	Grade 3, high husk content
2	Yellow corn	50	16.67	-
3	Layer concentrate	50	16.67	Layer concentrate
	Total	**300**	**100.00**	

Source: Processed primary data (2026)

Rice bran dominated the ration composition (66.67%), far exceeding the proportions of yellow corn and layer concentrate (16.67% each). The primary reason for the high use of rice bran was its lower price. However, the rice bran used was classified as grade 3 and contained a high proportion of husk. Harmen (2021) stated that rice-bran quality strongly influences its nutritional value; grade 3 rice bran contains a minimum of 8% crude protein and a maximum of 18% crude fiber, which is substantially lower in quality than grade 1 bran. The proportion of yellow corn (16.67%) was also well below the recommended inclusion level of 40-50%, contributing to the energy deficit in the ration. Layer concentrate was deliberately selected because the Alope chickens were intended as potential breeding stock rather than solely for slaughter during the grower phase; therefore, its relatively high calcium content was considered relevant to future mineral requirements.

3.2 Feed Management

Feeding twice daily was consistent with the recommendations of Samlawi et al. (2019). However, inconsistent feeding times were a major issue observed in the field. This practice differed from the recommendation to provide morning feed before 08:00, when lower

environmental temperatures can help optimize feed intake (Samlawi et al., 2019). According to Aryani et al. (2021), native chickens require metabolic energy to adapt to heat stress. As ambient temperature rises after 08:00, chickens may reduce feed intake as a natural response to limit metabolic heat production associated with digestion (heat increment of feeding).

Table 2. Comparison of Field Feed Management Practices with Literature Recommendations

Aspect	Condition at Bukit Bahagia Farm	Standards/Literature Recommendations
Feed ingredients	Rice bran (66.67%), yellow corn (16.67%), layer concentrate (16.67%)	Balanced ration providing energy, protein, minerals, and vitamins (Jha & Mishra, 2021)
Frequency (times/day)	Twice daily (morning and afternoon)	2-3 times daily (Samlawi et al., 2019)
Feeding time	Inconsistent; morning 08:00-09:00, afternoon 17:00-18:00	Morning before 08:00 and afternoon after 16:00 (Samlawi et al., 2019)
Feed amount (g/bird/day)	266.67 g/bird/day (20 kg for 75 birds)	80-100 g/bird/day (Lisnahan, 2018)
Storage method	Covered plastic containers placed directly on the floor	Dry, clean, covered, and elevated from the floor (Jha & Mishra, 2021)

Source: Processed primary data (2026)

The amount of feed provided was 266.67 g/bird/day, which greatly exceeded the recommended intake for grower-phase local chickens (80-100 g/bird/day), equivalent to approximately 2.7-3.3 times the standard requirement (Lisnahan, 2018). This condition may be related to the low nutrient density of the ration, particularly its metabolizable energy and crude protein levels, which may encourage greater feed intake to compensate for energy requirements. Purnamasari et al. (2024) stated that feed with nutrient contents below recommended standards can directly affect livestock productivity even when feed quantity exceeds normal intake. In terms of storage, using covered plastic containers was relatively appropriate; however, placing them directly on the floor without a raised base may increase moisture exposure, which can promote fat oxidation and mold growth, particularly in rice bran (Jha & Mishra, 2021; Mila & Sudarma, 2021).

3.3 Nutrient Content and Nutritional Adequacy of the Feed

The crude protein content of the ration (13.25%) was below the minimum standard of 14.0% (SNI 7783-2:2022), mainly because the ration was dominated by rice bran containing only approximately 8.50% crude protein. Crude protein deficiency can result in stunted growth and reduced feather quality (Kidd et al., 2021), which is consistent with field observations showing feather loss in 20-30% of the grower population. This condition may indicate deficiencies in protein and essential amino acids, particularly methionine and cysteine.

Table 3. Comparison of Ration Nutrient Content with Nutritional Requirements for Local Grower Breeder Chickens

Nutrient	Ration Content	Requirement Standard (SNI 7783-2:2022)	Difference
Crude Protein (%)	13.25	Min. 14.0	0.75
Metabolizable Energy (kcal/kg)	2,053	Min. 2,500	447
Crude Fat (%)	4.92	Min. 3.0	1.92
Crude Fiber (%)	13.25	Max. 8.0	5.25
Calcium (%)	1.52	0.9-1.2	0.32
Available Phosphorus (%)	0.30	Min. 0.3	-

Source: Processed primary data (2026); SNI 7783-2:2022

The metabolizable energy content of the ration (2,053 kcal/kg) was also well below the minimum standard of 2,500 kcal/kg, mainly because of the high proportion of grade 3 rice bran, which has a low metabolizable energy value (1,630 kcal/kg). Munandar et al. (2020) reported that increasing the proportion of rice bran in poultry rations above 20% can reduce production performance.

The crude fiber content (13.25%) exceeded the maximum standard of 8%, which was directly associated with the high husk content of grade 3 rice bran. Jha and Mishra (2021) stated that excessive crude fiber can reduce feed digestibility and the absorption of essential nutrients. The calcium content (1.52%) exceeded the standard range of 0.9-1.2%, largely due to the use of layer concentrate, whereas available phosphorus (0.30%) was at the minimum standard. The combination of excess calcium reduced nutrient absorption associated with high crude fiber, and limited phosphorus availability is consistent with reports from farmers of several cases of weak bones and difficulty standing, which may indicate impaired bone mineralization (Lisnahan, 2018). Crude fat (4.92%) was the only nutrient that clearly met the minimum standard of 3.0%, but this was insufficient to compensate for deficiencies or imbalances in other critical nutrients. Overall, among the six nutrients evaluated, crude fat met the recommended standard, available phosphorus was at the minimum standard, crude protein and metabolizable energy were below the minimum requirements, and crude fiber and calcium exceeded the recommended limits. These nutrient imbalances were consistent with field observations of feather loss in 20-30% of the population and several cases of weak bones

3.4 Recommendations for Improving Feed Management

First, the ration should be reformulated by reducing the proportion of grade 3 rice bran and increasing the proportion of corn to approximately 40-50% of the total feed ingredients (Harmen, 2021). High-quality alternative protein sources, such as trash fish (40-65% protein; Syah & Riza, 2019) or Black Soldier Fly larvae meal, may also be considered; the latter can replace up to 75% of fish meal without reducing growth performance (Tribudi et al., 2022). Second, feeding times should be standardized, particularly by providing morning feed consistently before 08:00. Third, concentrates specifically formulated for the grower/breeder phase should be used instead of layer concentrates intended for adult laying hens (Lisnahan, 2018). Fourth, feed mixing and storage should be improved by using covered containers

placed on a raised base to avoid direct contact with the floor. Fifth, feed supplements such as vitamin-mineral premixes, phytase enzymes to improve phosphorus availability (Jha & Mishra, 2021), and synthetic amino acids such as DL-methionine to address protein deficiencies more economically (Kidd et al., 2021) should be considered.

4. CONCLUSION AND RECOMMENDATIONS

Feed management at Bukit Bahagia Farm did not fully meet recommended standards. Feeding frequency was appropriate, but feeding times were inconsistent, and the amount of feed provided (266.67 g/bird/day) greatly exceeded the recommended 80-100 g/bird/day. The ration contained 13.25% crude protein, 2,053 kcal/kg metabolizable energy, 4.92% crude fat, 13.25% crude fiber, 1.52% calcium, and 0.30% available phosphorus. Compared with SNI 7783-2:2022, crude protein and metabolizable energy were below the minimum requirements, crude fiber and calcium exceeded the recommended limits, available phosphorus was at the minimum standard, and crude fat met the standard. These nutrient imbalances were consistent with field observations of feather loss in 20-30% of the chicken population and several cases of weak bones.

Farmers are advised to reformulate the ration by reducing the proportion of grade 3 rice bran, increasing yellow corn to approximately 40-50%, and adding high-quality protein sources so that crude protein meets the minimum standard of 14.0%. The use of vitamin-mineral premixes, phytase enzymes, and/or synthetic amino acids such as DL-methionine should also be considered. Feed management should be improved by standardizing feeding times, particularly by providing morning feed consistently before 08:00.

5. REFERENCES

Akbarillah, T., Hidayat, & Khoiriyah, T. (2007). Quality of rice bran from various rice varieties in North Bengkulu. Journal Science Farm Indonesia, 2(1), 36-40.

Aryani, A., Solihin, DD, Sumantri, C., Afnan, R., & Sartika, T. (2021). Physiological responses of KUB (Kampung Unggul Balitbangtan) chickens and Walik chickens with different HSP70 gene haplotypes exposed to acute heat stress. Indonesian Journal of Agricultural Sciences (JIPI), 26(2), 276-283. https://doi.org/10.18343/jipi.26.2.276

National Standardization Agency. (2022). SNI 7783-2:2022 Free-range chicken feed - Part 2: Grower. National Standardization Agency.

Edowai, E., Tumbal, ELS, & Maker, FM (2019). Performance of qualitative and quantitative traits of native chickens in Nabire District, Nabire Regency. FAPERTANAK Journal: Journal of Agriculture and Animal Husbandry, 4(1), 50-57.

Harmen. (2021). Analysis of corn requirements for poultry feed in West Sumatra. Journal Development Village, 6(2), 148-159. https://doi.org/10.30559/jpn.v6i2.364

Hartadi, H., Reksohadiprodjo, S., & Tillman, A. D. (1997). Feed composition tables for Indonesia (4th ed.). Gadjah Mada University Press.

Jha, R., & Mishra, P. (2021). Dietary fiber in poultry nutrition and their effects on nutrient utilization, performance, gut health, and on the environment: A review. Journal of Animal Science and Biotechnology, 12(51), 1-16. https://doi.org/10.1186/s40104-021-

00576-0

Kidd, M.T., Maynard, C.W., & Mullenix, G.J. (2021). Progress of amino acid nutrition for diet protein reduction in poultry. Journal of Animal Science and Biotechnology, 12(45), 1-9. https://doi.org/10.1186/s40104-021-00568-0

Lisnahan, CV (2018). Determination of nutrient requirements of growth phase native chickens raised intensively using the cafeteria method [Dissertation, Gadjah Mada University].

Mila, JR, & Sudarma, IMA (2021). Analysis of the nutritional content of rice bran as animal feed and income from rice milling businesses in Umalulu, East Sumba Regency. Tropical Animal Husbandry Bulletin, 2(2), 90-97.

Munandar, A., Horhoruw, WM, & Joseph, GJ (2020). The effect of rice bran supplementation on broiler chicken production performance. Journal of Archipelago Agriculture, 4(1), 38-45.

Purnamasari, D. K., Erwan, Syamsuhaidi, & Zulkarnaen, A. (2024). Nutritional quality of feed and its relationship to the productivity of super native chickens in East Lombok Regency. Journal of Science, Technology and Environment, 10(1), 1-12.

Samlawi, R., Rastosari, A., & Patria, CA (2019). The effect of feeding frequency on feed consumption, daily weight gain, and feed conversion ratio in broiler chickens. Wahana Peternakan, 2(2), 19-25.

Indonesian National Standard. (2013). Rice bran - animal feed ingredient (SNI 3153:2013). National Standardization Agency.

Shah, S. U., & Riza, S. (2019). Utilization of trash fish as a raw material for the fish-meal industry. Science and Technology Journal Policy Development and Innovation, 5(2), 64-75.

Tribudi, Y. A., Tohardi, A., Haryuni, N., & Lesmana, V. (2022). Utilization of Black Soldier Fly (Hermetia illucens) larval meal as a substitute for fish meal on the performance of Joper chickens during the starter period. Journal of Tropical Animal Nutrition, 5(1), 45-51.

Tunnisa, R., Dagong, MIA, Purwanti, S., Bugiwati, SRA, & Pakiding, W. (2024). Polymorphism of insulin-like growth factor-1 (IGF-1) gene and its association with growth traits of Alope chicken. Advances in Animal and Veterinary Sciences, 12(11), 2205- 2210. https://doi.org/10.17582/journal.aavs/2024/12.11.2205.2210