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Carcass Productivity and Meat Quality Bambu Apus Rabbit

H. Margatama[1], H. Nuraini[2,3]*, B. Brahmantiyo[4], & Supratikno[5]
[1]Graduate School of Animal Production Science and Technology, Faculty of Animal Science, IPB University
[2]Department of Animal Production Science and Technology, Faculty of Animal Science, IPB University
[3]Halal Science Center, IPB University, Indonesia
[4]Animal Science Research Center, Agriculture and Food Research, National Research and Innovation Agency
[5]Division of Anatomy, Histology, and Embryology, School of Veterinary Medicine and Biomedical Medicine, IPB University
*Corresponding author: hnuraini@apps.ipb.ac.id
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ABSTRACT

Rabbits are meat-producing livestock with high productivity. Rabbit meat has high nutritional content and is good for health. The DKI Jakarta Government through the Center for Animal Health and Livestock Services (Pusyankeswannak) has opened the Bambu Apus Livestock Park. This research was conducted to determine the productivity of bambu apus rabbit carcasses as broiler rabbits to support urban farming programs in DKI Jakarta. Ten of bambu apus rabbits (five males and five females), ten of new zealand white rabbits (eight males and two females) and 17 rexsi grinak rabbits (eight males and nine females) were used. The body weights of the rabbits ranged from 2000 to 3000 g per head. This research has obtained Ethical Clearance (Balitbangtan/Center for Animal Husbandry Research BRIN/NRm/01/2022). Rabbits were slaughtered according to Islamic Syar'i and the carcass were cutting according to the commercial cut. A completely randomized design with a 3 x 2 factorial pattern (sex and type of rabbit) was used with carcass productivity and meat physical properties as variables. Bambu apus rabbits have good carcass productivity (Carcass Percentage, Meat Bone Ratio), meat on commercial cuts (Loin and Hindleg) and carcass quality (pH, tenderness, Water Holding Capacity and cooking losses) which were the same as new zealand white rabbits and rexsi agrinak rabbits as the broiler rabbit. Bambu apus rabbits have good carcass production and carcass meat quality so they have the potential to be developed into broiler rabbits in support of urban farming programs.

Keywords: bambu apus rabbit, carcass, physical traits

ABSTRAK

Kelinci merupakan ternak penghasil daging dengan produktivitas tinggi. Daging kelinci memiliki kandungan nutrisi tinggi dan baik untuk kesehatan. Pemerintah DKI Jakarta melalui Pusat Pelayanan Kesehatan Hewan dan Peternakan (Pusyankeswannak) telah membuka Taman Ternak Bambu Apus. Penelitian ini dilakukan untuk mengetahui produktivitas karkas kelinci bambu apus sebagai kelinci pedaging mendukung program pertanian perkotaan di DKI Jakarta. Digunakan kelinci bambu apus sejumlah sepuluh ekor (lima jantan dan lima betina), kelinci new zealand white sejumlah sepuluh ekor (delapan jantan dan dua betina) dan kelinci rexsi agrinak sejumlah 17 ekor (delapan jantan dan sembilan betina). Bobot kelinci berkisar 2000-3000 g. Penelitian ini telah memperoleh *Ethical Clearance* (Balitbangtan/ Pusat Riset Peternakan BRIN/ NRm/ 01/ 2022). Kelinci disembelih sesuai dengan Syariat Islam dan karkas dipotong menurut potongan komersialnya. Rancangan Acak Lengkap pola faktorial 3 x 2 (jenis kelamin dan jenis kelinci) digunakan dengan peubah produktivitas karkas dan sifat fisik daging. Kelinci bambu apus memiliki produktivitas karkas yang baik (Persentase Karkas, Rasio daging tulang), daging pada potongan komersial (*Loin* dan *Hindleg*) dan kualitas karkas (pH, keempukan, Daya Mengikat Air dan susut masak) yang sama dengan kelinci new zealand white dan kelinci rexsi agrinak sebagai kelinci pedaging. Kelinci bambu apus memiliki produksi karkas dan kualitas karkas daging yang baik sehingga berpotensi untuk dikembangkan menjadi kelinci pedaging dalam mendukung program pertanian perkotaan (urban farming).

Kata kunci: kelinci bambu apus, karkas, sifat fisik

INTRODUCTION

The Bambu Apus Livestock Park was established by the DKI Jakarta Government under the supervision of the Center for Animal Health and Livestock Services (Pusyankeswannak). The establishment of this park is governed by Governor Regulation No. 313/2016 of DKI Jakarta Province, which outlines the organizational structure and operational procedures of the Center for Animal Health and Animal Husbandry Services. The primary focus of the park is rabbit breeding within the Bambu Apus District Area, in line with DKI Jakarta Province's urban farming program. This initiative aligns with Regional Regulation No. 4/2007 of DKI Jakarta Province, which prohibits poultry farming to prevent the spread of avian influenza.

Originally named the Bambu Apus Livestock Park, it was renamed the Bambu Apus Rabbit Park in 2018. The park received support in the form of 75 mature breeding rabbits, including both ready-to-mate brood rabbits and New Zealand White rabbits, as well as 10 Flemish Giant males. Through careful cross-breeding, these rabbits have successfully adapted to the climate and temperature conditions of DKI Jakarta, which typically range from 28°C to 35°C.

Rabbits are versatile animals and can serve various purposes, such as being kept as ornamental pets, raised for meat production, or utilized for fur harvesting (Brahmantiyo *et al.* 2017). They have the capability to reproduce 4-6 times per year, with each litter consisting of 4-8 offspring and an average harvest weight of approximately 2.5 kg per rabbit (Brahmantiyo 2014). Rabbit meat is renowned for its high protein content and low fat, making it a healthy choice for individuals with conditions like high blood pressure, heart disease, high blood cholesterol, and obesity (Brahmantiyo 2017). Consequently, rabbits possess significant potential for being developed as a superior meat-producing livestock in Indonesia. This study aims to assess the carcass productivity and meat quality of bambu apus rabbits, providing valuable insights into their suitability as broiler rabbits. The introduction of rabbits is expected to contribute to the promotion and advancement of urban farming programs in DKI Jakarta.

MATERIAL AND METHODS

Material

In this study, a total of ten bambu apus rabbits (five males and five females), ten new zealand white rabbits (eight males and two females), and 17 rexsi agrinak rabbits (eight males and nine females) were used. The body weights of the rabbits ranged from 2000 to 3000 g per head, with an average of 2655 ± 268 g per head. The research equipment utilized included digital scales, scalpel knives, meat pH meters, bimetal thermometers, a carper carver press, a planimeter, a warner bratzler shear force device, and Whatman 41 filter paper.

Methods

Preparation and Maintenance

The working procedures of this study have been granted Ethical Clearance by the Balitbangtan Experimental Animal Welfare Commission (KKHB) of the Agricultural Research and Development Agency, under the reference number Balitbangtan/Livestock Research Center BRIN/ NRm/01/2022. Initially, the rabbits were identified based on their body weight and sex. They were then housed individually in wire cages with bamboo flooring, measuring 70x60x40 cm. Each cage was equipped with feed and water containers, and regular cleaning and disinfection practices were employed to maintain cage cleanliness. The rabbits had unrestricted access to feed and water, which were provided on a daily basis.

The rabbits' diet consisted of a combination of commercial feed and green food. They were given 70 g of Citra Feed pellets and 500 g of green food. The concentrate feed had a composition of 88% dry matter, 15% crude protein, 14% crude fiber, 2% crude fat, and 14% ash content, while the field grass forage contained 12.6% dry matter, 11.5% crude protein, 40.9% crude fiber, 1.2% crude fat, and 11.7% ash content (Nawangsari and Hendrarti 2021). The rabbits were fed twice a day, with the first feeding at 07:00 WIB (Western Indonesian Time) and the second feeding at 12:00 WIB. Drinking water was replaced every morning, and any remaining water was discarded during the cleaning process.

Slaughter Process and Carcass Preparation

Rabbits were slaughtered in accordance with Islamic law, following a specific procedure that involves making three incisions. These incisions were made in the blood vessels (carotid communis artery and jugular vein), the respiratory tract (trachea), and the digestive tract (esophagus) using a sharp knife. After the rabbit has died, which was indicated by the cessation of blood flow, further treatment was conducted. Once it was confirmed that the rabbit was completely deceased, the next step involves hanging the rabbit by its calcaneus communis tendon. The head was then separated at the Atlanto-occipitalis joint. Subsequently, the rabbit was skinned, and the contents of the abdominal cavity were removed. The chest is then separated from the front legs and hind legs at the carpus and tarsus joints. The carcasses were then wilted in a refrigerator at ± 4 °C for 24 hours. The carcasses were then cut according to commercial cuts to obtain commercial cut weights. The cut consists of 4 parts: foreleg, rib, loin, and hindleg. Commercial cuts of rabbit carcasses can be seen in Figure 1.

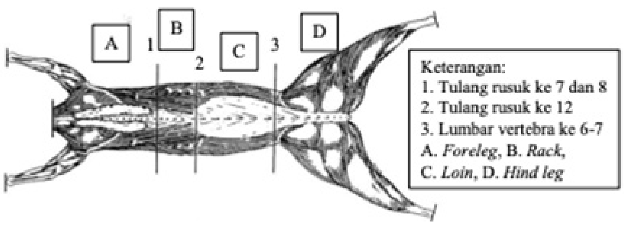

Figure 1. Commercial cuts of rabbit carcass (Blasco *et al.* 1993)

Meat Physical Quality Analysis

In this study, the physical testing of meat focused on samples taken from the loin. The pH value was measured using a pH meter, which involved inserting the pH meter probe into the meat until it reached the limit of the pH sensor. The pH meter then displayed the pH value of the meat.

To measure cooking loss, a bimetal thermometer was inserted into a 100-gram meat sample, which was then boiled until the temperature inside the meat reached 81°C. Subsequently, the sample was drained and left to stand until it reached a stable weight. Cooking loss can be calculated using the formula (AOAC 1980):

$$\% \text{ Cooking loss} = \frac{Initial\ sample\ weight - final\ sample\ weight}{Initial\ sample\ weight} \times 100\%$$

Meat tenderness was evaluated using the Warner-Bratzler shear force technique, which involves inserting a bimetal thermometer into a 100-gram meat sample and boiling it until the internal temperature reaches 81 °C. Subsequently, the meat is drained and cut into cylindrical shapes measuring 3-5 cm in length and 1.27 cm in diameter, following the direction of the meat fibers. These cylindrical meat samples were then sliced crosswise using the Warner-Bratzler shear force tool, and the measurement results were observed on the tool's scale, expressed in units of kg/cm^2.

The measurement of water holding capacity (WHC) involves assessing the amount of free water present in the meat. For this, 0.3 grams of meat sample was placed between two sheets of Whatman 41 filter paper, each with a thickness of 9 mm. The meat sample was then pressed with a load of 35 kg/cm^2 using two iron plates for a duration of 5 minutes. Following this, the area on the filter paper covered by the flattened meat sample, as well as the surrounding wet area, were marked. The wet area indicated on the filter paper was subsequently measured using a planimeter. The amount of water (expressed in mgH_2O) released from the meat due to the pressing process was calculated using a specific formula.

$$mg\ H_2O = \frac{wet\ area\ (cm2)}{0{,}0948} - 8{,}0$$

The percentage of free water is calculated using the following formula:

$$\%\ H_2O = \frac{mg\ H_2O}{sample\ weight\ (g)} \times 100\ \%$$

Experimental Design and Data Analysis

The experimental design in this study used a 3 x 2 factorial complete randomized design, where the first factor was rabbit breeds consisting of 3 types of breeds (bambu apus rabbits, new zealand white rabbits, and rexsi agrinak rabbits), and the second factor was sex (male and female). The mathematical model used is as follow:

$$Yijk = \mu + \alpha i + \beta j + (\alpha\beta)ij + \in ijk$$

Description:
Yijl : Observation value on the 1st repetition
μ : General average value
αi : Effect of treatment at the i-level (i=1,2…)
βj : Effect of level j from factor to-j (j=1,2,3…)
(αβ)ij : Effect of interaction between the i-treatment and the j-level of the factor j
∈ijl : Random error of normally distributed subplots

The data obtained were then analyzed using Generalized Linear Models (GLM). Tukey test was conducted at the 5% level on significantly different treatments.

Observed Variables

This study examined a range of variables to assess both the quantitative and qualitative aspects of carcass productivity. The quantitative aspects included measurements such as slaughter weight, carcass weight, carcass percentage, total meat weight, total bone weight, and meat-to-bone ratio. Additionally, the analysis of commercial cuts involved evaluating variables such as foreleg weight, rib weight, loin weight, hindleg weight, foreleg percentage, rib percentage, loin percentage, and hindleg percentage.

The evaluation of meat's physical quality focused on several variables, including acidity (pH), tenderness, cooking loss, and water holding capacity. In order to analyze the Temperature Humidity Index, data on air temperature and humidity were collected and subsequently calculated using the method proposed by Ogunjimi (2008):

$$THI = t - \left[\left(0{,}31 - 0{,}31\ \left(\frac{RH}{100}\right)\right)(t - 14{,}4)\right]$$

Description:
t°C : Dry bulb temperature (°C)
RH : Average humidity (%)

RESULTS AND DISCUSSION

General Condition of Research Location

This study was conducted in different locations, namely the maintenance of bambu apus rabbits at the Bambu Apus Rabbit Park, East Jakarta, while the maintenance of new zealand white and rexsi agrinak rabbits at the Livestock Research Center, Ciawi, Bogor. The microclimatic conditions of the research location are presented in Table 1.

The Temperature Humidity Index (THI) is a numerical value that represents the combined impact of air temperature and humidity on the level of heat stress experienced (Ratchamak *et al.* 2021). The heat stress categories corresponding to different THI values were established by LPHSI (1990). THI values are categorized as follows: < 27.8 indicates no heat stress, 27.8-28.9 indicates moderate heat stress, 29.0-30.0 indicates severe heat stress, and > 30.0 indicates very severe heat stress. Table 1 demonstrates that the microclimate conditions at the Livestock Research Center do not pose a risk of heat stress for rabbits. However, conditions at the Bambu Apus Rabbit Park have the potential for moderate heat stress. Li *et al.* (2016) have explained that rabbits thrive and develop

Table 1. Microclimate conditions of the research site

Research Location	Temperature (°C)	Air Humidity (%)	THI
Bambu Apus Rabbit Park, East Jakarta	30.99 ± 4.95	60.30 ± 23.02	28.63 ± 3.30
Livestock Research Center, Ciawi Bogor	28.07 ± 2.62	80.67 ± 17.86	27.19 ± 2.23

optimally within a temperature range of 15-25°C and an air humidity range of 55-65%. Considering the THI value and the climatic conditions in East Jakarta, it can be inferred that the bambu apus rabbit has successfully adapted to the climate of Jakarta. The type of rabbit used can be seen in Figure 2.

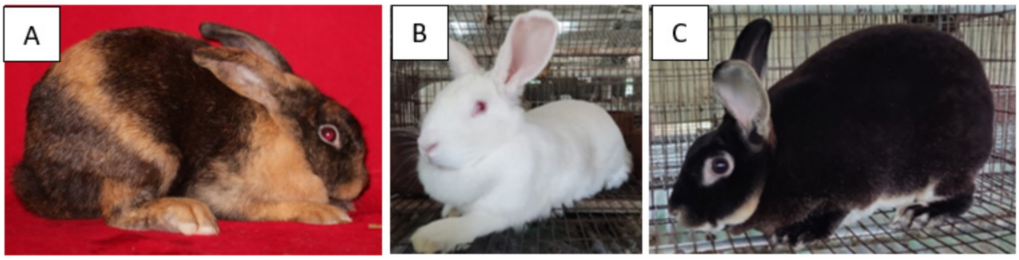

Figure 2 (A) bambu apus rabbit. (B) new zealand white rabbit. (C) rexsi agrinak rabbit.

Rabbit Carcass Productivity

Rabbit carcasses are parts of the rabbit body that have been reduced by blood, head, skin, feet, tail, digestive tract, and contents. The results of carcass productivity analysis of bambu apus rabbits, new zealand white rabbits, and rexsi agrinak rabbits were presented in Table 2.

The results of the carcass productivity analysis, presented in Table 2, indicate that the average carcass weight of bambu apus rabbits 1289.20 ± 53.17 g was not significantly different from that of new zealand white rabbits 1290.31 ± 7.51 g. This finding was consistent with the reported range of commercial rabbit carcass weight by Wahyono (2021), which falls between 900 and 1400 g. Additionally, bambu apus rabbits demonstrate a carcass percentage of 53.18%, which is not significantly different from the carcass percentages of new zealand white rabbits 51.38% and rexsi agrinak rabbits 51.57%. Gillespie (2004) suggests that a favorable rabbit carcass percentage falls within the range of 50-59%. These results indicate that bambu apus rabbits possess favorable carcass production capabilities comparable to those of new zealand white and rexsi agrinak rabbits. Consequently, bambu apus rabbits show potential for development as broiler rabbits.

Table 2. Results of carcass productivity analysis

Variables	Sex	Breeds		
		bambu apus rabbits	new zealand white	rexsi Agrinak
Slaughter Weight (g)	Male	2393.80 ± 237.90	2576.80 ± 316.13	2711.44 ± 232.72
	Female	2441.60 ± 209.25	2452.50 ± 300.52	3017.18 ± 257.13
	Average	2417.70 ± 33.80b	2514.69 ± 87.95b	2864.32 ± 216.19a
Carcass Weight (g)	Male	1251.60 ± 218.15	1295.62 ± 185.34	1408.55 ± 125.72
	Female	1326.80 ± 139.16	1285.00 ± 84.25	1544.43 ± 140.33
	Average	1289.20 ± 53.17b	1290.31 ± 7.51b	1476.49 ± 96.08a
Carcass Percentage (%)	Male	52.07 ± 5.12	50.18 ± 2.35	51.95 ± 1.55
	Female	54.28 ± 1.56	52.58 ± 2.98	51.19 ± 1.78
	Average	53.18 ± 1.56	51.38 ± 1.70	51.57 ± 0.57
Total Meat Weight (g)	Male	832.20 ± 160.96	980.63 ± 151.93	1102.17 ± 107.50
	Female	849.80 ± 77.43	945.00 ± 91.92	1188.69 ± 83.94
	Average	841.00 ± 12.45b	962.81 ± 25.19b	1145.43 ± 61.18a
Total Bone Weight (g)	Male	280.00 ± 24.37	302.50 ± 32.07	334.17 ± 29.12
	Female	273.60 ± 32.53	335.00 ± 7.07	353.13 ± 24.96
	Average	276.80 ± 4.53b	318.75 ± 22.98a	343.65 ± 13.41a
Meat to Bone Ratio	Male	3.00 ± 0.71	3.26 ± 0.50	3.30 ± 0.17
	Female	3.14 ± 0.47	2.82 ± 0.33	3.37 ± 0.19
	Average	3.08 ± 0.10	3.04 ± 0.30	3.34 ± 0.05

Different superscripts in the same row indicate significantly different values (P<0.05).

Regarding bone growth, bambu apus rabbits exhibit relatively lower total bone weight compared to new zealand white and rexsi agrinak rabbits, with values of 276.80 ± 4.53 g, 318.75 ± 22.98 g, and 343.65 ± 13.41 g, respectively. The significant difference (P<0.05) in total bone weight suggests that bambu apus rabbits display minimal bone growth. This finding aligns with the statement by Siregar (2014) that bone development influences body size and meat production. Minimizing bone proportion is desirable to optimize carcass production.

Furthermore, the meat-to-bone ratio, which represents the amount of edible body parts, shows no significant difference among bambu apus rabbits, new zealand white rabbits, and rexsi agrinak rabbits. The ratios are 3.08 ± 0.10, 3.04 ± 0.30, and 3.34 ± 0.05 g, respectively. Siregar (2014) suggests that commercial rabbit breeders aim for a meat-to-bone ratio of 5:1, coupled with a carcass percentage of 55%.

Commersial Cuts of Rabbit Carcasses

Commercial cuts are carcass parts that have economic value (Brahmantiyo *et al.* 2017). Commercial cuts are divided into four, namely foreleg cuts, rib cuts, loin cuts, and hindleg cuts. The results of the analysis of the weight and percentage of commercial cuts were presented in Table 3.

Commercial cuts are used as indicators of carcass production, where higher carcass weights correspond to greater values for commercial cuts (Brahmantiyo *et al.* 2017). Table 3 displays the percentages of commercial cuts for the foreleg, loin, hindleg, and rib parts, which did not exhibit significant differences among the three observed rabbit breeds. However, a significant difference (P<0.05) was observed in the weight and percentage of rib parts, indicating genetic variation among the rabbit breeds. This finding was consistent with the research conducted by Brahmantiyo and Raharjo (2009), who attributed the uneven growth in rib parts of hycole and new zealand white rabbits to genetic interactions with the environment.

Among the observed rabbit breeds, bambu apus rabbits displayed average percentages of commercial cuts as follows: foreleg 29.66%, rib 9.38%, loin 22.28%, and hindleg 36.36%. In a study by Brahmantiyo (2014), new zealand white rabbits were reported to have percentages of commercial cuts of 27.27% for the foreleg, 12.26% for the rib, 21.46% for the loin, and 37.16% for the hindleg. These findings closely align with the results of the present study. Therefore, bambu apus rabbits exhibit meat growth patterns similar to those of new zealand white and rexsi agrinak rabbits, making them suitable candidates for broiler rabbit production. Bambu apus rabbits demonstrate an optimal distribution of meat in commercial cuts with high economic value, particularly in the foreleg, loin, and hindleg. This observation aligns with the statement by Blasco *et al.* (1993), which emphasizes that commercial cuts of high economic value in rabbits were primarily found in the hindleg, loin, and foreleg. The advantage of these commercial cuts lies in their high meat proportion and low bone content, resulting in a greater meat yield.

Physical Quality of Rabbit Meat

The meat properties were analyzed and presented in Table 4. The pH values of the rabbit meat did not show any significant variations among the groups. Bambu apus rabbit meat exhibited a pH value of 5.80, while new zealand white rabbit meat and rexsi agrinak rabbit meat had pH values of 5.61 and 5.76, respectively. The pH value of bambu apus rabbit meat falls within the normal range for meat pH, which is consistent with the findings of Soeparno (1992), who stated that the optimal pH range for meat generally lies between 5.4 and 5.8.

Regarding the Warner Blaztler Shear Force (WBSF) values, no significant differences were observed between bambu apus and new zealand white rabbit meat, with measurements of 3.69 and 3.23 kg/cm2, respectively. A lower WBSF value indicates improved meat tenderness.

Table 3. Results of weight analysis and percentage of commercial cuts of carcasses

Variables	Sex	Breeds					
		bambu apus rabbits		new zealand white		rexsi agrinak	
		(g)	(%)	(g)	(%)	(g)	(%)
Foreleg	Male	357.20 ± 61.15	29.82 ± 2.53	377.50 ± 66.39	29.23 ± 1.95	422.89 ± 43.99	30.05 ± 2.10
	Female	378.40 ± 40.66	29.50 ± 0.71	402.50± 45.96	31.33 ± 1.42	466.38 ± 64.12	30.32 ± 4.07
	Average	367.80 ± 15.00b	29.66 ± 0.22	390.00 ± 17.68ab	30.28 ± 1.50	444.64 ± 30.75a	30.18 ± 0.19
Rib	Male	109.80 ± 20.38	9.15 ± 0.86	132.50 ± 20.35	10.38 ± 1.63	166.89 ± 46.12	11.79 ± 2.91
	Female	122.60 ± 8.47	9.60 ± 0.75	125.00 ± 7.07	9.75 ± 0.12	181.13 ± 24.04	11.80 ± 1.90
	Average	116.20 ± 9.05b	9.38 ± 0.32b	128.75 ± 5.30b	10.06 ± 0.92ab	174.01 ± 10.07a	11,79 ± 0.01a
Loin	Male	269.40 ± 63.86	22.25 ± 1.85	291.88 ± 47.88	22.64 ± 2.12	327.22 ± 57.22	23.12 ± 2.49
	Female	286.00 ± 35.54	22.30 ± 1.62	315.00 ± 21.21	24.56 ± 0.04	352.38 ± 36.16	22.96 ± 2.84
	Average	277.70 ± 11.74b	22.28 ± 0.04	303.44 ± 16.35ab	23.60 ± 1.36	339.80 ± 17.79a	23.04 ± 0.11
Hindleg	Male	444.60 ± 58.97	37.25 ± 2.18	481.25 ± 59.45	37.44 ± 1.41	487.72 ± 75.26	34.73 ± 5.05
	Female	452.20 ± 34.47	35.47 ± 3.49	437.50 ± 10.61	34.17 ± 1.53	530.69 ± 92.65	34.67 ± 6.88
	Average	448.40 ± 5.37	36.36 ± 1.26	459.38 ± 17.68	35.80 ± 2.31	509.20 ± 30.38	34.70 ± 0.05

Different superscripts in the same row indicate significantly different values (P<0.05).

Table 4. Physical Quality of Rabbit Meat

Variables	Sex	Breeds		
		bambu apus rabbits	new zealand white	rexsi agrinak
pH	Male	5.84 ± 0.12	5.63 ± 0.16	5.78 ± 0.26
	Female	5.76 ± 0.16	5.59 ± 0.04	5.73 ± 0.19
	Average	5.80 ± 0.06	5.61 ± 0.03	5.76 ± 0.04
Tenderness (kg/cm^2)	Male	3.80 ± 1.33	3.16 ± 0.27	0.58 ± 0.03
	Female	3.58 ± 0.62	3.30 ± 0.78	0.59 ± 0.03
	Average	3.69 ± 0.16a	3.23 ± 0.10a	0.59 ± 0.01b
Cooking loss (%)	Male	39.08 ± 2.39	52.86 ± 6.26	36.66 ± 6.91
	Female	42.92 ± 1.79	59.23 ± 1.32	38.17 ± 4.94
	Average	41.00 ± 2.72b	56.05 ± 4.50a	37.42 ± 1.07b
Percentage of free water (%H_2O)	Male	27.63 ± 1.70	32.77 ± 2.21	33.49 ± 5.57
	Female	27.13 ± 2.29	31.42 ± 1.11	38.81 ± 4.58
	Average	27.38 ± 0.35c	32.10 ± 0.94b	36.16 ± 3.75a

Different superscripts in the same row indicate significantly different values (P<0.05).

These results are lower compared to the study conducted by Brahmantiyo (2014), where WBSF values of 4.54 kg/cm^2 for male rex rabbits and 4.44 kg/cm^2 for female rex rabbits were reported. Additionally, Hermawan (2021) reported a WBSF value of 3.78 kg/cm^2 for new zealand white rabbit meat.

The term “cooking loss” refers to the percentage reduction in weight of meat before and after cooking. Lower cooking loss is generally associated with higher meat quality compared to higher cooking loss (Brahmantiyo 2014). In the case of bambu apus rabbits, the percentage of cooking loss differed significantly (P<0.05) from that of new zealand white rabbits. Bambu apus rabbits exhibited a lower cooking loss percentage of 41%, whereas new zealand white rabbits had a higher percentage of 56%. These variations in cooking loss can be attributed to the different breeds. Soeparno (1992) suggests that rabbit breeds with higher fat content tend to experience greater cooking loss due to fat loss during the cooking process. It is believed that new zealand white rabbits have a higher fat content compared to bambu apus and rexsi agrinak rabbits. Interestingly, there was no significant difference in cooking loss percentage between bambu apus and rexsi agrinak rabbits, indicating that they may have similar meat fat content and, therefore, comparable cooking loss values. This finding was consistent with the research conducted by Brahmantiyo (2014), which found no significant difference in fat content and cooking loss values between rex rabbit and local rabbit breeds. In summary, bambu apus rabbit meat exhibits a lower cooking loss percentage compared to new zealand white rabbits, which is in line with Lapase’s (2016) assertion that meat with lower cooking loss retains a higher amount of nutritional content due to minimal loss during cooking.

Water-holding capacity refers to the ability of meat to retain water within its structure or during external influences, such as added water (Brahmantiyo 2014). The measurements of free water percentage revealed a significant difference (P<0.05) among bambu apus rabbits, new zealand white rabbits, and rexsi agrinak rabbits. Bambu apus rabbit meat demonstrated a higher water-holding capacity, as evidenced by its lower percentage of free water at 27%, compared to new zealand white rabbits at 32% and rexsi agrinak rabbits at 36%. This suggests that bambu apus rabbit meat possesses a superior ability to bind water compared to the other breeds. This finding was consistent with Hermawan’s (2021) statement that the %H_2O value represents the percentage of free water in meat, with lower values indicating a higher water-binding ability. The strong water-binding capacity of meat helps maintain optimal moisture levels, tenderness, texture, and facilitates ease of processing, while also preventing physical and microbiological damage to the meat.

CONCLUSION

The bambu apus rabbits have good production and carcass percentage. Placement of bambu apus rabbit meat is optimally distributed on commercial cuts that have high economic value, namely loin and hindleg. The cooking losses and water holding capacity of the bambu apus rabbit meat have good value so they have the potential to be developed into broiler rabbits.

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