Journal of TROPICAL BIODIVERSITY E-ISSN : 2774-4116

Growth Performance Of Merawangarab Chicken With Different Feed Composition

Sri Darwati[1], Ilham Rizki[1], Harini Nurcahya[2*]

[1]*Departemen Ilmu Produksi dan Teknologi Peternakan, Fakultas Peternaksn IPB*
[2]*Program Studi Biologi, Universitas Nasional*

*Corresponding author: harininurcahya@yahoo.com

Submission	:	July, 09th 2022
Revision	:	October 08th 2022
Publication	:	December 30th 2022

Abstract

Indonesia has a variety of local chicken famincluding merawang chicken and arabic chicken. Merawang chickens have potential as dual-purpose type chickens and laying types for arabic chickens. Crossing the merawang chicken with arabic chicken is expected to be an alternative to increase the productivity of local Indonesian chickens through increasing the genetic material of local chickens and developing local chickens. Appropriate feed supports livestock productivity performance. This study aimed to examine the growth performance of merawangarab chickens with 50% merawang and 50% arabian genetic composition fed mixed feeds with commercial feed compositions for broilers with different rice bran from the 4th week to the 12th week. The number of DOC used as many as 80 tails and not differentiated by sex, 60% of the feed used; 80%: 100% commercial broiler feed for starter phase mixed with 40% rice bran; 20%; 0%. The study used a Randomized Block Design (RAK) with a hatching period as a group. The variables measured were feed consumption, body weight, feed conversion, and mortality. Feed and drinking water are provided ad libitum. The results showed that the performance of merawangarab chickens with different compositions of commercial feed and rice bran was the same (P>0.05) for all growth variables. The average body weight at 12 weeks of age was 1064.6-1167.8 g. In conclusion, the growth of merawangarab chicken by replacing commercial feed up to 40% with rice bran is still good.

Keywords: merawangarab chicken, chicken growth, feed

INTRODUCTION

Indonesia has a variety of local chicken including merawang chicken and arabic chicken. The two types of local chickens each have the potential as dual-purpose type chickens for merawang chickens and laying types for arabic chickens. Local chickens need to be maintained through purification and optimal utilization as a provider of animal protein (Sulandari *et al*. 2007). Crossing merawang chicken with arabic chicken is expected to be an alternative to increase the productivity of local Indonesian chickens through increasing chicken genetic material so that it can be used as a source of animal protein from local poultry and local chicken development. In addition to genetic factors, livestock performance is influenced by the environment such as feed.

Merawang chicken is a dual-purpose type because of its high egg production and growth compared to native chickens. The average egg production of merawang chickens is 165 eggs year^{-1} while native chickens are only able to produce 40-60 eggs year^{-1} (Abubakar *et al.* 2005). Arabic chicken, known as silver brakel kriel chicken, is a chicken that has been widely developed because it has the potential as superior laying hens and has egg characteristics that resemble native chickens. Arabic chicken is resistant to disease and weather changes (Yusdja et al. 2005), so it has potential to be developed in Indonesia and can also be crossed with other local chickens to obtain higher egg production with better meat quality (Sulandari *et al.* 2007). Darwati *et al.* (2017) have performed crossbreeding of merawang chickens with arabic chickens and their reciprocals which produced merawang-arab (MA) and arab-merawang (AM) chickens. In order to produce offspring with good productivity and quality, the two types of chickens are crossed. The productivity of the cross between arabian and merawang chickens at the age of 12 weeks, the male sex weighs 1057.70 g and the female has a weight of 940.20 g, while the cross between merawang and arab chickens at the age of 12 weeks, the male sex weighs 1087.20 g. and females 970.20 g.

Factors that affect productivity are feed consumption, growth or body weight gain, and feed conversion. Rapid growth is influenced by several factors, including natural feed additives to replace antibiotics without residue from beluntas leaves and sanitation from the cleanliness of the cage and environment to avoid infection with colibacillus bacteria (Kartasudjana and Suprijatna 2006).

Body weight in poultry is strongly influenced by the type of feed given. According to Widodo (2009) the feed consumed by poultry greatly determines body weight gain so that it affects the efficiency of a livestock business. The nutritional requirements in the preparation of feed for native chickens are 12% crude protein and 2500 kcal/kg metabolic energy (Yusriani 2013). Therefore, research is needed on the growth performance of Merawangarab (MA) chickens which have a genetic composition of 50% merawang. The type of feed given to chickens varies to determine the best type of feed for the growth of merawangarab chickens. This study examines the performance of merawangarab cruciferous chickens with the composition of commercial feeding with different rice bran in the growth phase.

Factors that affect productivity are feed consumption, growth or body weight gain, and feed conversion. Rapid growth is influenced by several factors, including natural feed additives to replace antibiotics without residue from beluntas leaves and sanitation from the cleanliness of the cage and environment to avoid infection with colibacillus bacteria (Kartasudjana and Suprijatna 2006).

METHOD

This research conducted at Animal Breeding and Genetics Field Laboratory, Faculty of Animal Husbandry, Bogor Agricultural University.

Material and Tools. DOC (day old chick) used were merawangarab crosses with genetic composition of 50% merawang chicken and 50% arab chicken, totaling 80 individuals unsexing (unisex). Other materials used are husks, commercial feed for starter phase broiler, rice bran, water, vitamins, desinfectans, wing bands, and ND vaccines. The composition of commercial feed mixtures with rice bran is presented in Table 1. The equipment needed is a brooder, wire cage, feeder, drinking bowl, and scale for feed and body weight of chickens.

Table 1 Feed nutrient content

Nutrient (%)	60K:40D	80K:20D	100K
Water content	9,46	9,58	10,12
Ash	10,60	7,96	6,12

Crude protein	15,64	18,39	21,15
Crude fat	4,95	4,59	5,36

D: Rice Bran K: Feed Commercial; Pusat Penelitian Sumberdaya Hayati dan Bioteknologi IPB

Procedure. Chicks (DOC) were kept in brooder cages until they were three weeks old. After three weeks of age, chickens were transferred to wire cages. During maintenance in the brooder cage, chickens were given commercial feed for broiler in the phase starter *ad libitum*. Drinking water is provided *ad libitum*. Chicks were vaccinated against ND at 3 days and 3 weeks of age.

Treatment feed given to chicken aged >3 weeks until aged 12 weeks. Feed treatment were P1 (60% commercial feed for broilerstarter phase+40% rice bran), P2 (80% commercial feed for broiler starter phase+40% rice bran), P3 (100% commercial feed for broilers starting phase). Feeding twice in the morning and evening.

The growth variables observed were feef consumption, body weight, feed conversion, and mortality. This research used randomized block design with reference to Mattjik and Sumertajaya (2013) with the type of feed as the treatment and hatching period as a group. Observation of growth variables was carried out every week until the chickens 12 weeks old. The data were analyzed for variance and continued with Tukey's comparative test if the result of analysis of variance were were significantly different.

RESULT

The growth performance of merawangarab chickens in this research is presented in Table 2.

Table 2. Growth performance of merawangarab chicken

Variabel	Average ± standard deviation		
	P1	P2	P3
Daily gain (g/bird/day)	12,2±1,5	12,0±0,4	13,5±2,6
12 weeks old weight	1064,6±135,5	1048,9±38,1	1168,0±2,24
Feed consumption (g/bird) during 12 weeks	3486,9±440,7	3364,4±373,7	2671,5±610,8
Feed convertion	3,8±0,2	3,5±0,2	3,3±0,3

K= commercial feed for broiler in starter phase; DP=rice bran; P1=60%K:40% DP; P2= 80%K:20% DP; P3= 100% K

The average feed consumption of merawangarab chicken by feeding P1, P2, P3 until the average age of 12 weeks is presented in Table 2. The results of statistical analysis of differences in feed composition had no effect on feed consumption of merawangarab chickens (P>0,05). Feed consumption reflects the level of adequacy of the nutrients needed. There was no difference in feed consumption in merawangarab chickens with different composition of commercial feed and rice bran.

The body weight of chickens with 50% merawang chicken genetics at 12 weeks of age with 60%, 80%, and 100% commercial feeding of 1064,58±135,5; 1048,88±38,1; and 1167,80±224 g

(Table 2). The body weight gain was not significantly different (P>0,05). In this research, different feeds had no effect on feed conversion (P>0,05) and no chicken died during the treatment feeding.

DISCUSSION

Feed Consumption.

This research showed that merawangarab chickens can be given mixed feed consisting of commercial feed with rice bran after > 3 weeks of age by replacing commercial feed with rice bran up to 40% with a total consumption of chicken feed with merawang genetics of 50% with commercial feed 60%, 80%, and 100% until the age of 12 weeks as shown in Table 2. Merawangarab chicken feed consumption was lower than kampung chicken reported by Yusriani (2013) by using feed containing 12% crude protein and 2500 kcal/kg metabolic energy.

The nutritional requirement of kampung chickens 0-12 weeks was 17% protein, 2800 kcal EM/kg energy, 0,87% lysine, 0,37% methionine, 0,9% Ca and 0,45% P (Sartika *et al*. 2014). The nutritional content contained in the rations in this study has fulfilled the nutrient requirements needed by merawangarab chickens.

Body Weight.

The body weigt of chickens with 50% genetic composition of merawang was not significantly different (P>0,05) at the age of 1-12 weeks (Table 2). Differences in commercial feed given to merawangarab chickens in studies with different feed compositions had no effect on chickens in studies with different feed compositions had no effect on chicken body weight (P>0,05). This is due to the addition of rice bran to commercial feed atarting after the chickens are 3 weeks old.

Nawawi and Nurrohmah (2011) state, native chickens in the satrter phase (0-4 weeks) need about 19%-20% protein with a metabolic energy of 2850 kcal/kg, the grower phase I requires about 18%-19% protein, 2900 kcal energ/kg and in the grower phase II the metabolic energy is around 3000 kcal/kg with protein of 16%-18%. The feed given in this research had protein content of 15,64% (60% commercial feed : 40% rice bran), 18,49% (80% commercial feed : 20% rice bran), 21,15% (100% commercial feed), thereby still sufficient the need of merawangarab chickens in the growth phase.

.

Feed Convertion.

Feed conversion is closely related to feed use efficiency (Table 2). This showed that an increase in crude protein content has an increased chance of protein retention, as atated by Fanani *et al*. (2014) that increasing the versatility of alkane protein increases protein retention that can be utilized by the body and affects growth in the form of increased body weight. Zainal (2012) stated that feed conversion is the ratio between feed consumption and body weight gain. According to Suhardi (2011); Edjeng and Kartasudjana (2006) stated that a low feed conversion rate means that the amount of feed used to produce 1 kg of meat is less. The higher the feed conversion values means that more feed is need to increase body weight per unit weight.

This rsearsch showed that merawangarab chickens gave same response to a commercial feed mixture with rice bran with replacement 0f 20%-40% commercial is still higher than native chickens which are given commercial feed of 100%, 85%, 75% and 55% which have feed conversion of 2,89; 2,71; 2,97; and 3,20 (Eriko *et al*. 2016). This is presumably due to the genetics of arab chicken in

merawangarab which are local laying hens whose body weight is lower than kampung chickens.

Mortality

In this study, none of merawangarabcruciferous chickens died until were 12 weeks old. Tis showed that the feed treatment has no effect on growth and feed treatment has no effect on growth and feed treatment of giving rice bran until 40% in a commercial feed mixture with rice bran still fullfil the nutritional for the growyh of merawangarab chicken.

CONCLUSION

Growth performance of merawangarab chickens up to 12 weeks of age with commercial feed and rice bran (100% commercial feed; 80% commercial feed mixed with 20% rice bran; 60% commercial feed with a mixture of 20%-40% rice bran) were same. Commercial feed with a mixture 20%-40% rice bran can be used in the rearing of merawangarab chickens.

REFERENCES

Abubakar, G.T., Pambudi, R., & Sunarto. (2005). Performans ayam buras dan biosekuritas di Balai Pembibitan Ternak Unggul Sapi Dwiguna dan Ayam. Prosiding Lokakarya Nasional Inovasi Teknologi Pengembangan Ayam Lokal. Semarang: BPTU Sembawa, hal: 61-85.

Agustina, D., Iriyanti, N., & Mugiyono, S. (2013). Pertumbuhan dan konsumsi pakan pada berbagai jenis itik lokal betina yang pakannya disuplementasi probiotik. *Jurnal Ilmiah Peternakan* 1(2): 691-698.

Anggitasari, S., Sjofjan, O., & Djunaidi, I.H. (2016). Pengaruh beberapa jenis pakan komersial terhadap kinerja produksi kuantitatif dan kualitatif ayam pedaging. *Buletin Peternakan* 40(3):187-196.

Darwati, S,, Afnan, R., & Maulana, V.S. (2017). Growh of merawang chicken with arab chicken crossing and its reciprocal at 1 to 10 weeks of age. The 7th International Seminar on Tropical Animal Production. Yogyakarta: Universitas Gadjah Mada.

Edjeng, S., & Kartasudjana, R. (2006). Manajemen Ternak Unggas. Jakarta: Penebar Swadaya.

Eriko, Jatmiko, & Nur, H. (2016). Pengaruh penggantian sebagian ransum komersial dengan dedak padi terhadap performa ayam kampung. *Jurnal Peternakan Nusantara* 2(1): 27-33.

Mattjik, A.A,, & Sumertajaya, I.M. (2013). Perancangan Percobaan dengan Aplikasi SAS dan Minitab. Cetakan ke-4. Bogor: IPB Pr.

Nawawi, N.T., & Nurrohmah. (2011). Pakan Ayam Kampung. Jakarta: Penebar Swadaya.

Nuroso. (2010) . Panen Ayam Pedaging dengan Produksi 2x Lipat. Jakarta: Penebar Swadaya.

Rasyaf, M. (2011). Panduan Beternak Ayam Pedaging. Cetakan ke-4. Jakarta: Penebar Swadaya.

Sartika, T., Resnawati, H, Iskandar, S., Purna, M., & Unadi, A. (2014). Teknik Formulasi Ransum Ayam KUB Berbasis Bahan Pakan Lokal. Bogor: Pusat Penelitian dan Pengembangan Peternakan Balitbangtan Kementan.

Sopian, Y., Darwati, S., & Sumantri, C. (2015). Performa F1 antara ayam sentul x kampung dan ayam pelung x sentul pada umur 0-12 minggu. Jurnal Ilmu Produksi dan Teknologi Hasil Peternakan. 3(3): 131-137.

Sulandari, S., Zein, M.S.A., Payanti, S., Sartika, T., Astuti, M., Widyastuti, T., Sujana, E., Darana, S., Setiawan, I., & Garnida. (2007). Sumberdaya genetik ayam lokal Indonesia Ed ke-1. Di dalam: Diwyanto K, Prijono SN, editor. Keanekaragaman Sumber Daya Hayati Ayam Lokal Indonesia: Manfaat dan Potensi. Bogor: Pusat Penelitian Biologi, LIPI.

Sulistyoningsih, M., Sunarti, D., Suprijatna, E., & Isroli. (2011). Studi tingkah laku: kajian perilaku makan dan minum ayam kampung berbasis riset manajemen alas kandang. Di dalam: Prosiding Seminar Nasional Pendidikan Pengetahuan Alam Bervisi SETS. Ikatan Cendekiawan SETS Indonesia (ICSI). [Semarang 30 April 2011]. Semarang: Unnes Semarang. hlm 123-134.

Widodo, W. (2009). Nutrisi dan Pakan Unggas Kontekstual. Malang: Universitas Muhammadiyah Malang.

Yusdja, Y.R., Sajuti, W.K., Sejati, I.S., Anugrah, I., Sadikin, & Winarso, B. (2005). Pengembangan Model Kelembagaan Agribisnis Ternak Unggas Tradisisonal (Ayam Buras, Itik dan Puyuh). Jakarta: Departemen Pertanian.

Yusriani, Y. (2013). Kebutuhan pakan untuk ayam kampung. Serambi Pertanian. Vol. VII. No.03. ISN: 1907-7858. BTTP Aceh

Zainal, H., Sartika, T., Zainuddin, D., & Komaruddin. (2012). Persilangan pada ayam lokal (KUB, sentul, gaok) untuk meningkatkan produksi daging unggas nasional Workshop Nasional Unggas Lokal. Bogor: Balai Penelitian Ternak.