



Red Jungle Fowl Offspring Maintenance System And Production In The Community In Bengkulu

Sutriyono^{1*}, Urip Santoso^{1,2}, Heri Dwi Putranto¹, Dadang Suherman¹

¹Department. of Animal Science,. Agriculture Faculty,. University of Bengkulu,. Jln. W.R. Supratman Kandang Limun,. Bengkulu 38371.

²Postgraduate Program_S2, in Natural Resources and Environmental Management, Agriculture Faculty, University of Bengkulu. Jln. W.R. Supratman Kandang Limun, Bengkulu 38371.

* Penulis Korespondensi (sutri7784@gmail.com)

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ABSTRACT

The red junglefowl is a wild fowl and has been tamed and produces offspring, and is kept by the people of Bengkulu. The aim of the research is to identify and evaluate rearing management and production of red jungle fowl offspring in communities in Bengkulu. Research respondents were determined using the snowball sampling method, and fifty respondents were obtained. Data was obtained through observation, discussion and interviews, and filling in prepared forms; namely food management, housing, disease prevention, utilization and production. The results showed that the RJF offspring kept by the community were used for crossbreeding with local chickens (47%), production of chicks (28%), as hunting chickens (62%), and ornamental chickens (82%). Chickens are kept in 4 ways: (1) housed during the day and night, (2) chickens are kept free during the day and housed at night, (3) chickens are kept free at any time, and (4) chicken is placed on a perch. Feed given is commercial feed (BR1), corn, rice, brown rice, bran, crickets and ant eggs. Average egg production is 34 eggs/ hen/year, and chick production is estimated at 27 chicks/hen/year, and population growth is 2.68%/year. In conclusion, the community raising chicken is traditional, the quantity and quality of feed is not sufficient, the cages are very simple, disease prevention and safety protection are inadequate. As a local chicken, the average egg production is high, hatchability and chick production are high, but population development is slow. Poor chick rearing management and the aim of raising RJF offspring cause population development to be slow.

Keywords: Community, management and production, rearing, RJF Offspring

ABSTRAK

Ayam hutan merah merupakan unggas liar yang telah dijinakkan dan menghasilkan keturunan, serta dipelihara oleh masyarakat Bengkulu. Penelitian ini bertujuan untuk mengetahui dan mengevaluasi manajemen pemeliharaan dan produksi peranakan ayam hutan merah yang dipelihara oleh masyarakat Bengkulu. Responden penelitian ditentukan dengan metode snowball sampling, dan diperoleh lima puluh responden. Data diperoleh melalui observasi, diskusi dan wawancara, serta pengisian formulir yang telah disiapkan; meliputi pengelolaan pakan, kandang, pencegahan penyakit, pemanfaatan dan produksi. Hasil penelitian menunjukkan bahwa keturunan RJF yang dipelihara masyarakat digunakan untuk kawin silang dengan ayam lokal (47%), produksi anak (28%), sebagai ayam berburu (62%), dan ayam hias (82%). Ayam dipelihara dengan 4 cara: (1) dikandangkan pada siang dan malam hari, (2) ayam dibebaskan pada siang hari dan dikandangkan malam hari, (3) ayam dibebaskan pada siang dan malamnya, dan (4) ayam ditempatkan pada tenggeran. Pakan yang diberikan adalah pakan komersial (BR1), jagung, beras, beras merah, dedak, jangkrik dan telur semut. Produksi telur rata-rata 34 butir/ekor/tahun, produksi anak ayam diperkirakan 27 ekor/ekor/tahun, dan pertumbuhan populasi 2,68%/tahun. Kesimpulannya, peternakan ayam masyarakat masih

bersifat tradisional, kuantitas dan kualitas pakan belum mencukupi, kandang sangat sederhana, pencegahan penyakit dan perlindungan keamanan belum memadai. Sebagai ayam lokal rata-rata produksi telurnya tinggi, daya tetas dan produksi anaknya tinggi, namun perkembangan populasinya lambat. Manajemen pemeliharaan anak ayam yang buruk dan tujuan membesarkan keturunan RJF menyebabkan perkembangan populasi menjadi lambat.

Kata kunci: Komunitas, Manajemen dan Produksi, Pemeliharaan, Keturunan ayam hutan merah

INTRODUCTION

The Red Red Fowl (*Gallus gallus*) is a wild chicken in tropical areas, the ancestor of today's chickens, a source of food for humans in ancient times in Southeast Asia. In nature, this species easily adapts to the environment, and has been found in various habitats such as moist forests and secondary forests, dry bushes and protected forests (Zac Mackenzie, 2017), plantation crops (oil palm, tea and coffee), transitional areas or agricultural cultivation areas, but they prefer to live in secondary forest areas which have been converted into agricultural land (Colias and Colias, 1967). Red jungle fowl are omnivorous animals, and eat several types of plants (80%) and the rest are animals (Zac Mackenzie, 2017). Some types of food are seeds, insects, larvae, worms, leaves, fruit, roots and tubers (Rahayu, 2001), roots of tapioca (Colias and Saichuae, 1967), bamboo flowers, coconuts, and grass hoppers (Nishida et al., 1975) and rubber nuts (Abdullah and Babjee, 1982). The parts of the plant that are eaten are young fruit, the soft shoots, and fleshy leaves (Arshad et al., 2000). While the animals eaten by red jungle fowl are earwigs, isopods, beetles, leeches, and spiders (Arshad et al., 2000), termites and ants (Medway and Wells, 1976; Arshad et al., 2000), this chicken is found in several regions in Indonesia, such as Java, Bali, West Sumatra, South Sumatra (Rahayu, 2001), and Bengkulu (Sutriyono et al., 2016).

In nature, red jungle fowl are threatened with extinction caused by damaged habitat, illegal hunting, egg collection, being eaten by predators, and hybridization (Peterson and Brisbin, 1999). Some predators are tigers, mongooses, wild cats, eagles, owls, lizards and

snakes. Snakes, lizards, mice, small carnivores consume eggs and chicks (Subhani et al., 2010), genetic contamination occurs due to mating with free-range chickens (Animal Diversity Web, 2006; Worlds Galliformes, 2006).

The red jungle fowl was domesticated 8 thousand years ago (West and Zhou, 1988). Domestication has led to phenotypic changes that affect behavior, performance, physiology and reproduction (Belteky, 2016), changes in morphology and produces several new species in a relatively short time (Price, 1999). Two important things related to behavior are the frequency and intensity of behavior. Domesticated animals, particularly domesticated chickens, are generally less exploratory and less active than their ancestors, and exhibit more crowing and wing appearance (Schütz et al., 2001; Vaisanen et al., 2005). Currently, domesticated chickens have been bred and directed for production, such as laying hens (Appleby et al., 2004; Rauw et al., 1998). Chickens are reared to maximize the ratio between egg production and feed consumption (Kerje et al., 2003). Laying hens can produce about 300 eggs per year, while a red jungle fowl can produce 15-20 eggs per year (Romanov and Weigend, 2001).

In Bengkulu, people domesticate red jungle fowl by catching chickens in the forest using nets and racit tools and the catch is a rooster (Setianto, et al., 2015). Sutriyono et al. (2016) reported that domestication is one of the uses of red jungle fowl which includes elements of utilization and protection. Protection is

carried out by providing food, preventing and eradicating disease, providing cages for chickens to live in, and protection from predators. Meanwhile, the benefits of red jungle fowl for people who keep red jungle fowl and their offspring are as a genetic source, food source, ornamental animal, and as an attractive chicken for hunting (Sutriyono et al., 2016a). Domestication has produced local chickens called burgo chickens or Rejang chickens, which are the result of a cross between a male red jungle fowl and a female village chicken (Setianto et al., 2014). Burgo chickens can be found in forests in Bengkulu province and its surroundings (Putranto et al., 2017). Their offspring are kept by people for economic purposes, hunting lying chickens and as ornamental chickens. In order to provide higher benefits for society, population and production need to be increased. The main obstacle to developing local chickens apart from genetic factors is chicken rearing management, where improving rearing management can increase local chicken production (Ketaren, 2010; Nataamijaya, 2010; Hidayat and Asmarasari, 2015). Until now, maintenance of red junglefowl breeds has not been identified and is thought to have an effect on production and population.

The aim of the research is to determine and evaluate rearing management and production of red junglefowl offspring.

MATERIALS AND METHODS

The research has been carried out for 4 months in Bengkulu City, Bengkulu, Indonesia. Fifty keepers of red jungle fowl breeds that had been determined using the snowball sampling method were used as research samples. One of the red jungle fowl breeders was selected and identified, then the next respondent was selected based on information from the first respondent. The next respondent was selected in the same way. The main data collected are chicken population, egg production, incubation, and chick production. The supporting data is the

respondents characteristics, the number of chickens each respondent owns, the length of time they have kept chickens, population structure, burgo-keeping techniques, and conditions of the research location. Data collection is carried out by: interviews, and filling out questionnaires, as well as site observations. The data obtained from the survey was then processed using the Microsoft Excel program, the data was displayed in tables, and discussed according to descriptive statistics.

RESULTS AND DISCUSSION

Research Location Conditions

Bengkulu City, Bengkulu is located on the West Coast of Sumatra, Indonesia at 3^o45'-3^o59' SL, and 102^o14'-102^o22' EL. and consists of 9 subdistrict and 67 villages. Bengkulu City is the capital city of Bengkulu Province which is located on the western edge of Sumatra Island and is directly adjacent to Central Bengkulu Regency in the North, Seluma Regency in the South, Central Bengkulu Regency in the East and the Indian Ocean in the West. Administratively, the city which is also known as 'Bumi Raflesia' is divided into 9 sub-districts and 67 villages. According to BPS data, the population of Bengkulu City in 2019 was recorded at 385 thousand people. With an area of 151.70 km², the population density in Bengkulu City in 2019 was 2,538 people per km².

Characteristics of Respondents

Respondents in this study were 50 red jungle fowl breeders, consisting of 20% aged 20-30 years, 18% aged 31-40 years, 22% aged 41-50 years, 38% aged 51-60 years, and 2% aged more than 60 years. The education of respondent farmers is undergraduate 40%, senior high school 46%, junior high school 10%, and elementary school education 4%.

Table 1. Feed ingredients used by breeders of red jungle fowl offspring

Chicken food	Amount of breeder		Description
	people	%	
Rice	1	2	Feed for hens, roosters and chicks
Rice grain	15	30	Feed for hens, roosters and chicks
Comercial Feed	41	82	Feed for chicks, ornamental chickens
Corn	39	78	Feed for adult chickens
Cooked Rice	13	26	Feed for adult chickens
Bran	15	30	Feed for adult chickens
Cricket	2	4	Feed for ornamental and hunting chickens
Ant egg (kroto)	3	6	Feed for chicks

The livelihoods of respondents are civil servants as much as 26%, retired civil servants 8%, farming 4%, trading 6%, private employees 6%, and entrepreneurs 50%. Respondents raising red jungle fowl are for crossbreeding with local chickens (47%), chick production (28%), for hunting chickens (62%), and ornamental chickens (82%).

The rearing of hen by breeders is carried out by keeping in cages during the day and night, 50% of the total respondents, released during the day and night 13.79% of the total respondents, caged at night and released during the day 36.21%. The rearing of roosters by breeders is carried out by being caged during the day and at night 67.86% of the total respondents, released during the day and night 7.14% of the total respondents, caged at night and released during the day 25%. The rearing of chicks by farmers is carried out by being caged during the day and at night, 48.21% of the total respondents, released during the day and night 14.29% of the total respondents, caged at night and released during the day 37.5%. In relation to raising chickens, some respondents chose the perch method. Raising chickens by perching is only done on ornamental chickens and roosters and roosters for hunting. Rearing like this is more secure and controlled, food and drinking are easily provided, prevention and treatment of disease is easy. On the other hand, some breeders choose how to raise chickens by releasing them in their yards. Some of their reasons are (1) chickens can look for and choose feed, so that by releasing the chickens

will get enough feed according to taste, (2) Chickens still have wild characteristics, according to their natural habitat, the chickens are more free to carry out activities and foraging for food, (3) not having adequate cages. Breeding chickens by releasing them in nature, the safety of chickens is not guaranteed, it is difficult to control and feed is not provided by the farmer.

Red Jungle Fowl Feeding Management

Chicken feed management includes the type of feed ingredients used, the number of types of feed given, the time to feed the chickens, feeding techniques, frequency of feeding, and feeding times as shown in Table 1, Table 2, Table 3, and Table 4.

Feed ingredients used by farmers

The feed ingredients used by breeders are rice, grain, commercial feed, corn, cooked rice, rice bran, crickets and ant eggs with the number of breeders respectively being 2%, 30%, 82%, 78%, 26%, 30 %, 4%, and 6% (Table 1).

Farmers feed chickens with fewer types compared to their ancestors that live in nature. Red jungle fowl in nature consume 26 types of invertebrates and 12 types of plants, with the consumption of feed ingredients from plants is 80.88% and from animals 19.12% (Arshad et al., 2000). The low amount of feed given results in low feed consumption and affects the

Table 2. Number of types of feed used by red jungle fowl breeders

Amount of feed ingredients	Amount of breeder		Description
	people	%	
One kind of feed	5	10	Feed for chicks, tame chickens and released day and night, chickens are housed at night and released during the day.
Two types of feed	18	36	Feed for chicks, tame chickens and released continuously, chickens are housed at night and free during the day.
Three kinds of feed	20	40	Feed for chicks, housed chickens, chickens on perches, free range chickens during the day
Four kinds of feed	6	12	Feed for chicks, chickens kept in cages
Five kinds of feed	1	2	Feed for chickens kept in cages continuously,
Total	50	100	

Table 3. Frequency of feeding chickens per day

Feeding frequency per day	Amount of breeder		Description
	people	%	
One time	9	18	Feed for chickens that live freely without being caged, chickens are housed at night and released during the day.
Twice (morning and evening)	38	76	Feed for chicks, chickens kept in cages, chickens on perches, and chickens housed at night and free during the day
Three times	3	6	Feed is given to the chicks, the chickens are housed during the day and night, the chickens are placed on perches
Total	50	100	

nutritional intake needed by the body which can affect the growth, production and reproduction of chickens. This happens to chickens that are always kept in cages. Meanwhile, chickens that are freed during the day and kept in cages at night receive additional plant and animal feed from nature. Farmers feed chickens not mixed, but given separately between one ingredient and another, and the time of administration varies. Feeding this way is not good. When eating, birds are able to choose the appropriate type of feed to meet their nutritional needs. According to Pousga et al. (2005), birds can choose feed ingredients to obtain balanced nutrition to meet their physiological needs if given the opportunity to choose, so that nutrition is sufficient. With adequate nutrition, chickens will be healthy, productive, their digestive tract will be good, and their immune system will increase.

Number of types of chicken feed given by the farmer

Table 2 shows the number of types of feed used by farmers to feed chickens. Farmers provide one type, two types, three types, four types, and five types of feed, the numbers respectively are 10%, 36%, 40%, 12%, and 2% of breeders.

The feed ingredients for red jungle fowl provided by breeders come from plants and animals, but in limited quantities. The feed ingredients used by breeders are local and commercial ingredients. Commercial feed contains complete nutrition and is a mixture of several feed ingredients, but the price is quite expensive so it is only given to certain chickens and at certain times. Meanwhile, local feed is cheaper and easier to obtain, but breeders do not pay attention to the chickens' needs. The number of types and diversity of feed given to chickens by breeders varies, from 1 type of feed to 5

types of feed, the feed is not consistent over time, and is mixed but separated from each other, and the feed depends on the type of feed available. When compared with its ancestors that live in nature, the number of types of food is much different. In nature, birds have many choices of types of feed in greater quantity so that nutrition is more adequate. Arshad et al. (2000) reported that red jungle fowl in nature eat various types of food derived from plants and animals. Some of them are palm fruit, papaya, cempedak, rubber fruit, nuts and Macaranga seeds, snails, egg shells, bones. Female red jungle fowls like lots of invertebrates and vertebrates, while roosters like palm fruit.

Feeding frequency

Table 3 shows the frequency of feeding chickens by breeders. Chickens are fed once a day, twice a day, and three times a day with the number of breeders respectively being 18%, 76%, and 6% of breeders.

Farmers feed chickens once, twice, and three times per day, with the number of farmers respectively being 18%, 76%, and 6% of farmers. Feeding once per day is given to chickens that live freely without being caged, chickens are housed at night and released during the day. Farmers give food twice a day to chicks, chickens kept in cages, chickens on perches, and chickens housed at night and free during the day. Farmers feed the chicks three times a day, the chickens are housed during the day and night, the chickens are placed on perches.

Feeding with a high frequency is better than a low frequency, because by feeding frequently the feed, chicken health, chicken safety and the environment are well controlled, and if deviations and abnormalities occur, action can be taken immediately. Sufficient feed supplies, healthy chicken conditions, a healthy environment and good predator management will result in good chicken production and reproduction. Spradley et al. (2008) and Taherkhani et al.

(2010) suggested that increasing the feeding frequency to 2 times per day in broilers can improve production performance, and feeding broilers 2 or 3 times a day can improve reproductive performance during the beginning of the egg-laying cycle. High feeding frequency and intensive feeding systems for local chickens can improve growth and better survival. Feed for local chickens that has good quality, 18% crude protein, and 2800 Kcal. Metabolic Energy/kg is sufficient to produce good growth for local chickens in the initial growth phase (Nakkazi et al., 2015). In this study, 76% of farmers fed chickens twice a day with limited quantity and quality which could affect growth, production and reproduction. Raising chickens by releasing them into nature will help improve nutritional intake by looking for food in nature, both from plants and animals. Meanwhile, keeping local chickens in cages will suffer from a lack of feed if it is not provided. Providing feed for local chickens with good nutrition is expensive, making it economically difficult for farmers. Breeders only provide good quality feed to chicks, ornamental chickens and hunting chickens, which are limited in number. Raising purebred red jungle fowl for business purposes, most breeders keep them in cages with the aim of being easy to control and preventing the chickens from running into the forest.

Time of feeding chickens

Farmers feed chickens in the morning, afternoon and evening and in combination, namely morning and afternoon, morning and afternoon, afternoon and evening, or morning and afternoon and evening (Table 4).

Farmers give food to chickens at different times. Farmers feed chickens in the morning (6%), midday (12%), morning and afternoon (74%), at noon and

Table 4. Time to feed red jungle fowl offspring by breeders

Time of Feeding	Amount of Breeder		Target chicken
	People	%	
In the morning	3	6	Released chicken, caged chicken, chicks, chickens are kept on perches
At noon	6	12	Released chicken
In the morning and at afternoon	37	74	Released chicken, caged chicken, chicks, chickens are kept on perches
At noon and afternoon	1	2	released chickens at the day and cage at night
In the morning, at noon and afternoon	3	6	Released chicken, caged chicken, chicks, chickens are kept on perches
Total	50	100	

Table 5. Population and Production of Red Junglefowl offspring

No.	Description	Amount	(%)
1	Number of respondents (people)	50.00	100
2	Chicken red jungle fowl population	684	100
	a. Pure red jungle fowl	52	7.6
	b. Unpure red jungle fowl (cross with local chicken)	632	92.4
3	Age structure of red junglefowl and their offspring		
	a. Hens	159	23.25
	b. Rooster	237	34.65
	c. Chick	195	28.50
	d. young chicken	93	13.60
4	Frequency of laying eggs per year	3.31	
5	Production of egg (egg/hen/period)	10.3	
6	Egg production (egg/hen/year)	34	
7	Incubated eggs (egg/hen/period)	9.02	87.57
8	The eggs are hatched	7.38	81.82
9	Production of chicks (chicks/hen/year)	27.82	

afternoon (2%), and in the morning and at noon and afternoon (6%) (Table 4). Feeding time can affect chicken performance of chickens. Modu et al. (2014) stated that the timing of feeding laying hens affects egg production and quality, reproduction and oviposition time. According to Soltanmoradi et al. (2013), the time to feed chickens affects egg production and egg hatchability. The highest production and highest hatchability are achieved by feeding during the day (25%) and evening (75%). The same thing was reported by Daniel and Balnave (1981), that feeding chickens in the middle of the day resulted in higher egg production than feeding chickens in the morning. Chickens eat more food in the middle of the day and their nutritional intake, especially calcium (Ca), is high. The Ca element is used for egg shell

formation, which normally begins in the afternoon or evening. Therefore, feeding chickens in the middle of the day is better than feeding chickens in the morning because feeding chickens in the morning causes less Ca elements to be utilized by the chicken's body (Farmer and Roland, 1982). Nataamijaya (2010) reported the same thing, that high weights were achieved in chickens that were given lots of feed during the day. The time of day feeding chickens also influences reproduction, where sperm and spermatozoa production is achieved in the afternoon (Farmer and Roland, 1982). Therefore, feeding red jungle fowl offspring requires taking into account the timing of administration, in order to

obtain high egg production and good quality..

Production and Population of Red Junglefowl Offspring

The total population of red jungle fowl and their offspring is 684, consisting of pure red jungle fowl (7.6%) and impure or crossbreeds (92.4%). The population consisted of adult male chickens (34.65%), adult female chickens (23.25%), chicks (28.50%), and young chickens (13.60%) (Table 5).

Hens from the red jungle fowl breed produced 10.13 eggs/hen/period or 34 eggs/hen/year (Table 5). This value is higher when compared to research by Sutriyono et al. (2016), who reported that red jungle fowl offspring in North Bengkulu Regency produced 19.11 eggs/hen/year. Meanwhile, Warnoto (2001) stated that red junglefowl offspring, which are kept traditionally, can produce 18 eggs/hen/period. Meanwhile, Putranto (2011) reported that the egg production of red jungle fowl offspring was 15-26 eggs/hen/8 weeks. Several factors that influence egg production of red jungle fowl offspring were individual chicken factors (hen age, physiological status, wild or tame), and environment (cage conditions, cage density, cage sanitation, and rearing management). chicken rearing system, chicken feeding, and disease prevention).

The production of chicks in this study was 27.82 chicks/hen/year (81.82% of egg production). The high production of children is determined by egg production, the number of eggs incubated, and egg fertilization. Chick production from red jungle fowl breeds is influenced by (i) egg fertility, and (ii) egg hatchability, and (iii) hatching conditions (Sutriyono et al., 2016),.

CONCLUSION

The community raising RJF offspring is traditional, the quantity and quality of feed is not sufficient, the cages are very simple, disease prevention and safety protection are inadequate. As a local chicken, the average egg production is high, hatchability and chick

production are high, but population development is slow. Poor chick rearing management and the aim of raising RJF offspring cause population development to be slow.

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