

## Development Of Local Poultry, BURGO CHICKEN TO IMPROVE FOOD SECURITY IN BENGKULU

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### *ABSTRACT*

This study aims to evaluate the production, population, and develop scenarios for the development of burgo chicken. The research was conducted for 3 months in Bengkulu Tengah, Bengkulu Province. Thirty-eight respondents were selected by the snowball sampling method used in this study. Data obtained through interview, filling out questionnaires, and observing; covering the identity of respondents, rearing management, production, and population; then a population development scenario is prepared. Research result, the purpose of raising chickens for food production, business, hunting chickens, and ornamental chickens. Chickens are housed during the day and night, released during the day and night, and a combination. Egg production 6-12 eggs/hen/period, an average of 8.64 eggs/hen/period; egg laying period 2-6 times/year, average 3.14. Total egg production per year is 2946, incubated is 90.98%, egg hatchability is 80.17%; and produced 2148 chicks. The population of burgo chickens was 357 (hens 29.97%, roosters 25.21%, chicks 29.41%, and young chickens 15.41%). The highest selling value of burgo chicken is IDR 800000 (decorated chicken) and the lowest is IDR 50000. In conclusion, burgo chicken has high productivity and selling value which is able to support food security through the provision of animal food and people's purchasing power increases, and population development is slow due to poor management. Recommendations, population development by multiplying hens, improving rearing and hatchery management, increasing egg laying period, reducing mortality, and preventing predators.

**Keywords:** burgo chicken, production, population development scenario

### **INTRODUCTION**

Food security is one of the serious problems facing the world at this time, as a result of the increase in the world's population who requires food supplies in sufficient quantities and suitable for high nutrition. Food security describes the state that all people at all times have physical, social and economic access to sufficient, safe and nutritious food to meet the needs of an active and healthy life' (FAO, 1996). Several factors that contribute to food security generally fall into four core areas, namely availability, access, utilization and stability (FAO, 2009). Food supply can come from various sources of production, both domestic and imported. Accessibility of food ingredients means that food can reach consumers (adequate means of transportation) and consumers have enough money to buy, and are socially and culturally accepted. Associated with utilization, individuals must be able to eat in sufficient and good quality in order to live a healthy life. Food and air must be safe and clean, and thus adequate water and sanitation is also involved at this level. Regarding humans, society is able to withstand shocks to the food chain system,

both caused by natural disasters (climate, earthquakes) and those caused by war, and economic crisis.

More important developments are needed, which can be considered as: the long-term (fifth) dimension of food security. A sustainable diet is defined as a diet that “protects and respects biodiversity and ecosystems, is culturally acceptable, accessible, economically just and affordable; adequate, safe and healthy nutrition; while optimizing natural and human resources (FAO, 2012). Based on this statement, it implies that local resources are an important part to support food security.

In the poultry sector, local poultry play an important role in supporting food security. Local poultry play an important role in local economies and have the potential to increase resilience and help alleviate poverty among rural populations (Alders et al., 2005). The contribution of local poultry production to household food security is demonstrated by the quantity and quality of poultry products, especially eggs. Local chicken and eggs are a source of protein in the rural diet, described as cheap and valuable protein, easy to harvest and in manageable quantities (Adene and Oguntade 2006). Poultry meat has an average protein content of 20% and a relatively low fat content (7%), especially under the skin (Eekeren et al., 2004). Chicken eggs have been an important part of human nutrition since ancient times. Approximately 6.5g of egg protein per egg contains a well-balanced mix of the 9 amino acids essential for human health. lysine; methionine; phenylalanine; threonine; tryptophan; valine (Lunven et al., 1973). Protein quality is a measure of the efficiency of the human body's use of consumed protein and is determined by the presence and proportion of these amino acids in the protein. 1988) and has become the standard by which other foods are evaluated (Sparks, 2006). Amino acids are essential for the production of enzymes, some hormones, hormone receptors, DNA components, and other functional components necessary for growth, tissue maintenance, and regulation of metabolic function. Eggs contain fat-soluble vitamins. A, D, E, K, and water-soluble B vitamins. Thiamine (B1), Riboflavin (B2), Pantothenic Acid (B5), Pyridoxine (B6), Biotin (B7), Folic Acid (B9), Cobalamin (B12), Choline. B2 and B12 levels are relatively high. Levels B5, B9, A and D are moderate. Adequate maternal folate levels reduce the risk of neonatal neural tube defects (Garza and Rasmussen, 2000).It also contains minerals such as calcium, iron, magnesium, phosphorus, selenium, sodium and zinc. increase.

Several local poultry in Indonesia have grown and reproduced, including free-range chicken, bekisar chicken, cemani chicken, pelung chicken, ayang balengek. Meanwhile, Bengkulu has an endemic species called chicken burgo, and has grown and reproduced in people in Bengkulu. The burgo chicken is a cross between a male red jungle fowl and a female native chicken. This chicken has been developed by the community as an ornamental chicken, a source of food, and a source of income. The selling value of ornamental chicken is higher than that of consumption chicken, making it possible to add a source of income that can be used to buy main food ingredients. The performance of chicken production is the main goal in chicken cultivation, both local and non-local chickens. Performance is determined by individual chickens, environment, and management. The environment which includes the cage system, the feed they consume, climatic factors and management systems affect the performance of poultry (Tadelle, 2003; Yousif and Eltayeb, 2011; Olaniyi et al., 2012). Maintenance conditions are an important management input in poultry production (Jin and Craig, 1994; Gerzilov et al., 2012; Ojedapo, 2013). Maintenance conditions affect egg production and growth performance of poultry, production and quality as well as health and well-being (Yousif and Eltayeb, 2011; Olaniyi et al., 2012; Ojedapo, 2013).

Until now, local poultry are still growing and breeding in communities in various regions in Indonesia for various purposes, especially for food production. This shows that local poultry

are able to survive in local environmental conditions. Therefore it is necessary to maintain the diversity of local poultry and increase its production. It is necessary to evaluate the management of maintenance and production. In addition, it is necessary to develop a development scenario to increase production to support food security and the community's economy.

### MATERIAL AND METHODS

The research was conducted on the community in Central Bengkulu Regency, Bengkulu Province, Indonesia for 3 months. Respondents were selected purposively, namely people who keep red jungle fowl and their offspring. Based on the preliminary survey obtained 38 respondents who develop red jungle fowl. Data were collected by means of periodic in-depth interviews, filling out a list of questions, observations, and measure by weighing for the parameters of production characteristics.. The data collected included respondent characteristics, number of chickens kept, chicken utilization, rearing system, chicken characteristics (body weight), production characteristics (number of eggs, egg weight), hatching eggs, and production of children. To measure the characteristics of chickens, not all were observed and measured, but chickens that were tame and easy to catch. While the characteristics of egg production are not all weighed, only eggs that have not been incubated by the hen are weighed. The data obtained were tabulated and presented in tabular form and discussed descriptively

### RESULTS AND DISCUSSION

#### Research Site Conditions

Central Bengkulu is one of the regencies located in Bengkulu Province, with an area of 1,429.14 km<sup>2</sup> which is divided into land with an area of 1,223.94 km<sup>2</sup> and the sea 205.2 km<sup>2</sup>. The location is located at coordinates 102°11'24"-102°37'12" East Longitude and 3°28'48"-3°51'0.36" South Latitude; and is located at an altitude of 0-541 meters above sea level with a wavy and hilly topography with a slope of 5-35%. The highest point is in a protected forest area. The loaksi has 10 sub-districts and 113 villages. The climate in this location is type A (wet tropical) with humidity of 70-87%, the wet month is 10 months starting in October and ending in July. The average annual temperature is 25<sup>o</sup>C -27<sup>o</sup>C, monthly rainfall is 230 -620 mm/month, and the number of rainy days is 10 -23 days, and the maximum air temperature is 29.6<sup>o</sup>C-31.5<sup>o</sup>C, and the minimum temperature is 23.1<sup>o</sup>C-24.2<sup>o</sup>C. and the annual precipitation is 2626 mm. The annual rainfall is 2500-4000 mm/year and the average rainy day is 188 days/year. The average wind speed is 18 knots (about 10 km/h), and the maximum reaches 14-32 mph, the barometric pressure is 1008.4-1012.6 mb, and the average length of sun exposure is 55-86%, and humidity air is 80-87%. The location is in accordance with the requirements for growing and breeding jungle fowl and their offspring.

#### Characteristics of Respondents

Respondents in this study were the breeders of red jungle fowl (chicken burgo) totaling 38 people, aged 20-30 years were 26.32%, aged 31-40 years was 23.68%, 41-50 years was 21.05%, and age 51- 60 years is 13.16%, and age >60 years is 15.79%. The respondents' occupations are farming (47.37%), self-employed 44.74%, civil servants (5.26%), and retired civil servants (2.63%). Respondents with elementary school education 28.95%, junior high school graduates 18.42%, high school graduates 36.84%, college graduates 36.84%, and the rest did not graduate school (13.16%). Respondents with experience in raising red jungle fowl (chicken burgo) for 1-

5 years are 55.26%, 6-10 years are 39.47%, 11-15 years are 0%, and 16-20 years are 5.26%. The purpose of raising Burgo chickens is for development (egg production, chick production) and as a hobby (decorative chickens, crowing chickens, and hunting chickens), and economic purposes.

**Rearing Management of Red Jungle Fowl offspring (burgo chicken)**

The chicken rearing system is divided into 3 groups based on age and sex, namely hen, rooster and chick. Respondents kept the hen by being caged day and night (31.43% of respondents), the hen was released during the day and day (28.57%), the hen was released during the day and kept in the cage at night (37, 57%). 14%), and the combination (2.86%). Respondents kept the roosters caged day and night (71.05%), the chickens were released during the day and night (13.16%), the chickens were caged at night and the chickens were released during the day (15.79), and combination (0%). Likewise for chicks, respondents maintain chicks by being caged during the day and night (40%), chickens are released during the day and night (20%), and chicks are caged at night and released during the day (40 %). The chicken rearing system and its designation are listed in Table 1.

Table 1. Rearing of red jungle fowl offspring

No	Method of chickens rearing	Chicken specifications
1	Chickens are kept in cages during the day and night	day old chicks, pre-weaned chicks, wild chickens, hunting chickens
2	Chickens are kept in cages at night and released during the day	Tame chickens, chicks that are weaned off and tame, chickens that have grouped with kampung chickens
3	Chickens are released at night and during the day	Chicken that is tame and chicken that is already in groups with kampung chickens

Source: Processed Primary Data (2021)

**Feeding Management**

Feed is an important input in chicken rearing, which can affect production and reproductive performance. The feed given was grouped into 2 groups, namely commercial feed and local feed ingredients. Respondents gave commercial feed (BR-1) as much as 22%, and it was given to chicks, wild chickens, and ornamental or hunting chickens. BR-1 is a commercial feed produced by an animal feed company (PT. Japfa Comfeed Indonesia, Tbk), and contains a maximum water content of 12%, minimum crude protein 21%, maximum crude fiber 5%, calcium 0.9-1.1 %, and phosphorus 0.6-0.9% (Kusuma et al., 2016). Meanwhile, local feed is given to all tame chickens, both males and especially chickens that are released day and night and chickens that are released during the day and housed at night. Respondents feed local corn (40% of respondents), feed rice (58%), rice (10%), cooked rice (16%), and bran (10%). The type of local feed given varies between breeders and between regions (Sutriyono et al., 2016). The number of types of feed given between respondent farmers also varies. Respondents giving one type of feed is 22%, 2 types of feed are 32%, 3 types of feed are 18%, and 4 types of feed are 4%. Respondents gave feed in the morning (26% of respondents), midday (6%), afternoon (6%), morning and afternoon (4%), morning and evening (24%), afternoon and evening day 2%, and morning and afternoon and evening (8%). The way of feeding varies depending on how it is kept. For chickens kept in cages, the feed is placed in a food container. Chickens that are kept

in cages at night and released during the day, and chickens that are released during the day and night are fed by spreading feed over the ground.

#### Disease prevention and control

Disease prevention is done by cleaning the cage. To maintain the health of chickens, vitamins and other chemical drugs are used. Treatment of sick chickens is done by chemical and biological methods. The chemical drugs provided are tetrachlor, vitamin B complex, vitachick, supertop. While biological treatment is used young betel nut. The use of chemical drugs is in accordance with what is recommended on the packaging label, while the use of herbal drugs (young areca nut) is carried out if the chicken is sick. Based on the survey, the data obtained were 12 respondents using tetrachlor, 2 farmers using vitamin B complex, 2 people using vitachik, 6 people using young areca nut, and 1 person using supertop. The rest do not provide medicine for chickens because they are considered burgo chickens are more resistant than other chickens,

#### Production and population of burgo chicken

The number of burgo hens in this study was 115, and 108 were productive and the rest were unproductive. The highest hen's egg production was 12 eggs/hen/period and the lowest was 6 eggs/hen/period with an average of  $8.64 \pm 2.24$  eggs/hen/period. The highest egg-laying period in a year is 6 and the lowest is 2 egg-laying periods, with an average of 3.14 egg-laying periods/year. The highest total egg production was 72 and the lowest was 12, with an average of 28.45 eggs/hen/year (Tabel 2). This value is higher when compared to the research of Sutriyono et al. (2016), who reported that the production of red jungle fowl offspring in Seluma district was 19.11 eggs/hen/year. Meanwhile, Warnoto and Setianto (2009) stated that the offspring of red jungle fowl (chicken burgo) that were reared intensively produced 14-18 eggs/hen/period. This can be caused by differences in management that can reduce egg production. Egg production is influenced by various factors, such as: environmental conditions, cage system, quantity and quality of feed, climate, and management (Tadelle, 2003). The productivity of poultry species is influenced by the management system applied, and will increase with increasing feed and management (Gueye, 2003). In general, the management of local poultry farms uses low inputs and low outputs, so productivity is low when compared to high input systems (Gunaratne et al., 1993). The highest production of chicks in Bengkulu Tengah was 25.12 chicks/hen/year and the lowest was 12.56 chicks, an average of 19.04 chicks/hen/year. Sutriyono et al. (2016) reported that the high and low production of chicks is influenced by egg production, the number of eggs incubated, the number of eggs hatched, and the period of laying eggs in a year. Setianto et al. (2013) reported that the hatchability of eggs of the descendants of red jungle fowl (chicken burgo) kept by the community was quite high, from the incubated chicken eggs, 79.40% hatched. The low production of chicks per hen is due to low egg production, short egg-laying period, and fewer eggs hatching. Buctot and Espina (2015) suggested that egg fertility and hatchability were determined by the male to female ratio, egg storage conditions and length, age of chicks, feed nutrition, disease, maintenance management and environmental factors. Several other factors that cause slow population development are the death of chicks before weaning, being preyed on by predators, decreasing chickens for consumption, and escaping to the forest.

Table 2. Population, egg production and chicks production

No	Description	Total	Percentage (%)
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1	Respondent	38	100
2	Hen	115	100
3	Productive hen	108	93.91
4	Egg production (egg/hen/period)	8.64±2.24	
5	Egg-laying period per year on average	3.14±1.01	
6	Egg production/hen/year on average	27.13	
7	Total egg production (egg/108 hens)	2946	
8	Incubated eggs	2680	90.97
9	Egg hatch	2148	80.17
10	Total chicks production/year/108 hens	2148	

Source: Processed Primary Data (2021)

#### Production characteristics of burgo chicken

The production of burgo chicken is inseparable from individual, genetic, environmental and management factors. The burgo chicken is the result of a cross between a male red jungle fowl and a female free-range chicken. Red jungle fowl are wild, with smaller bodies and lower production. On the other hand, native chickens are docile with a larger body and high production. The cross between the two chickens is estimated to have a higher production and a larger body than the red jungle fowl. Based on the measurements, it was found that the weight of the male Burgo chicken reached 1530 grams and the female Burgo chicken reached 1480 grams, with an average egg weight of 34.64±7.21 grams. Rahayu (2002) stated that the body weight of a female red jungle fowl aged 1.5 years was 1 kg, and the weight of a rooster was 1.5 kg; and a hen produces 6-8 eggs/period (Arshad, 1999), with an egg weight of 28 grams/egg (Rahayu, 2002). Growth and production can be increased by improved management. In captivity with intensive maintenance, red jungle fowl are able to produce 10-14 eggs/period (Rahayu, 2002). Therefore, it is assumed that growth and production can still be increased.

Table 3. Production characteristics of burgo chicken

No	Parameter	Maximum	Minimum	Average
1	Hen's weight (g)	1480	600	859.58 ±288.67
2	Rooster weight (g)	1530	758	1056.23±201.69
3	Egg weight (g)	55	28	34.64±7.21

Source: Processed Primary Data (2021)

#### Economic Value of Chicken Burgo

The economic value based on the data obtained from the study is listed in Table 4. The price of chicken varies depending on gender and age.

Table 4. The price of the offer of chicken burgo

No	Parameter	Maximum	Minimum	Average
1	Chicken Price	50000	50000	50000
2	Hen price	150000	30000	83077
3	Rooster price	700000	100000	294444
4	Ornamental chicken	800000	150000	432500

Source: Processed Primary Data (2021)

Table 4 shows that the highest price is for ornamental chicken, which is Rp. 800,000,- and the lowest is for consumption chicken, which is Rp. 50,000. This value is very valuable to increase the income of farmers. However, the number of chickens sold per unit time is very small. Improvement and creating a market is one way to increase the flow of marketing that can stimulate the development of local chickens, especially burgo chicken.

### CONCLUSION

In conclusion, chicken burgo has high productivity and selling value which is able to support quality food security through the provision of animal food and increase people's purchasing power. Slow population development due to poor management. Several scenarios to increase productivity are genetic selection with criteria for high production and reproductive capabilities, improved management (feed, cage, health, protection from predators).

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