Overview of KUB Chicken Rearing at the Small Farmer Level in Central Java

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Abstract. The Kampung Unggul Balitbangtan (KUB) chicken is new superior native chicken released by the Indonesian Ministry of Agriculture that has been developed in various regions across the country, including Central Java. The purpose of this study was to look at how KUB chicken development is performing at the farmer level in Central Java Province. A survey was used to conduct the research from February to March 2022. Semi-structured questionnaires were used and distributed to interview 30 KUB chicken farmers who were scattered in 6 districts, i.e. Semarang, Karanganyar, Brebes, Tegal, Kudus, and Kota Salatiga. The information gathered includes the farmer's occupation, experience, and purpose for raising, population distribution, male to female ratio, feed, and product sales. Data were tabulated and descriptively analyzed. The findings revealed that civil servants (41%) dominated KUB chicken keepers, followed by breeders (34%), and housewives (10%). They have 1–2 years of experience raising chickens, depending on when the KUB chicken program was introduced in Central Java. Chicken were raised for dual purpose (60%), fattening (23%), and breeding (13%) with sex ratio: 1 rooster for 5 hens. The feed used were the mixed feed (34%), commercial feed (23%), and fermented feed (20%). Prices for KUB chicken products vary greatly, with non-hatching eggs costing IDR 2,000–3,500, day old chick (DOC) costing IDR 6,000–9,000, per kg live weight costing IDR 37,000–50,000, pullets costing IDR 90,000–100,000, and cockerels costing IDR 110,000–125,000. In conclusion, KUB chicken is beneficial to farmers, they employ strategies to boost efficiency, but somehow the product selling price varies.

Keywords: KUB chicken · Farmer level · Central Java

1 Introduction

So far, the need for food, particularly animal-based protein, has relied on beef and chicken. Both protein sources usually used to meet the country's meat requirements. This is understandable given that the demand for animal-based protein continues to

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rise in tandem with population growth and increased awareness of the importance of nutricious food. However, both broilers and layers continue to dominate poultry food sufficiency, while local chickens are still falling short of the mark on a national scale. Local chicken meat consumption is only 0.782 kg/capita/year, or 13.7%, compared to broiler meat consumption of 5.683 kg/capita/year [1].

Recognizing that the role of local chickens is still limited, the government is attempting to increase their production capacity and benefit. Because we know that the growth of local chickens is slow [2], farmers are utilizing it as a side line and use leftover food as feed. Several local chicken lines have been developed by research institutes and universities, with growth rates far exceeding that of local chickens in general. This included IPB-D1 chickens (released in accordance with Minister of Agriculture Decree No: 693/Kpts/PK.230/M/9/2019 [3]), ULU (Unggas Lestari Unggul) chickens, KUB-1 and SenSi chickens, which are local chicken produced by Indonesian Agency for Agricultural Research and Development [4].

KUB-1 chickens are local chickens that have been selected for 6 generations and have 50% henday average [5]. Selection on KUB-1 chickens was related to egg production uniformity and broodiness trait reduction, with the goal of forming pureline, though egg production only reached 50% on average. KUB-1 chickens were later developed in almost all Assessment Institute for Agricultural Technology (AIAT) in Indonesia, including AIAT Central Java. KUB-1 chicken was developed intensively in Central Java beginning in 2019 in the Bedah Kemiskinan Rakyat Sejahtera (BEKERJA) program and was then followed by other programs such as the millennial farmer, also the poverty alleviation and agribusiness program in Islamic boarding schools. From these various programs, KUB-1 chickens were spread to various breeders or farmer groups in Central Java. Based on this, this research was carried out with the aim of looking at the productivity performance of KUB-1 chickens at the farmer level.

2 Materials and Methods

This study was carried out from February to March 2022. The study used a direct survey method on KUB-1 chicken farmers in Central Java whose DOC came from the breeding unit of KUB chicken in AIAT Central Java. In this study, 30 KUB chicken farmers from various districts in Central Java were sampled, including Semarang, Karanganyar, Brebes, Tegal, Kudus, and Salatiga. Surveys were conducted using a questionnaire as a guide. The information gathered includes the farmer's occupation, breeding experience and purpose, population distribution, male to female ratio, feed, and product sales. The collected data was tabulated, averaged, and descriptively analyzed.

3 Results and Discussion

KUB chicken existed in Central Java and has since spread to all districts and cities. Chickens are raised either individually or in groups. The occupations of KUB chicken farmers were identified in this study in five districts and one city where KUB chickens originated. Table 1 summarizes the occupations of KUB chicken farmers. In Central Java, the majority of KUB chicken farmers (41%) work as civil servants, followed by farmers

Table 1. The Farmer's main occupations.

Professions	%
Private employee	3
Retired civil servant	3
Farmer	34
Trader	9
Civil servant/extensionist	41
Housewife	10

(34%), and housewives (10%). Further investigation revealed that the civil servants who raise a large number of chickens are Field Extension Officers. This is understandable given that extensionists have first access to information about the advantages of KUB chickens over the others. KUB chickens were reared as a sideline outside of their busy lives as civil servants. According to Dirdjopratono et al. [6], native/local chickens are mostly reared as a sideline with a small number of ownership (less than 50 heads) and farmers providing leftovers food or kitchen waste as feed. The results showed that providing up to 50% of the ration with restaurant waste had no effect on growth because the protein content was high (10%) [7]. Restaurant waste can be used as a substitute for rice bran due to its high nutritional content, especially when rice bran is expensive. Protein content of bran for chicken feed ranges between 10 and 11%.

Experience in livestock rearing is important because it is positively related to livestock business success. Success usually follows the longer the experience of raising. As summarized in Table 2, the majority of farmers keep KUB chickens for 1–2 years (40%), followed by experience raising less than 0.5 years (34%), and 3 years experience (20%), though farmers (6%) keep KUB chickens for more than 3 years. The initial spread of KUB chickens in an area is undoubtedly related to the experience of chicken keeping. As in Central Java, the BEKERJA program, which uses KUB chickens as material, began the intensive distribution of KUB chickens in 2019. The BEKERJA program in Central Java began in Purbalingga, followed by Pekalongan, Tegal, and other districts. Although there are farmers with more than three years of experience raising KUB chickens, this is understandable given that the Ministry of Agriculture designated KUB chickens as a local chicken breed in 2014 [8].

The goal of livestock rearing is significant because it relates to business capital and the necessary livestock production facilities such as land area, cage shape, and other equipment such as hatching machines, particularly for farmers aiming to produce DOC. As written in Table 3, farmers in Central Java raise KUB chickens for a combination of breeding and fattening (60%), followed by fattening (23%), and farmers producing DOC (17%). According to the number of farmers who have these two goals, it can be explained that the combination business is the most profitable. The farmer produces

Table 2. Experience level of raising KUB chickens.

Year(s)	%
>0.5	34
1–2	40
3	20
>3	6

Table 3. Farmer's objectives on raising KUB chickens.

Objectives	%
Breeding	17
Fattening	23
Breeding and fattening	60

DOC, some of which are sold, while others are not and are fattened as finisher chickens. The only disadvantage is that the combined breeding and fattening business necessitates a larger investment. Some independent farmers, such as those in the districts of Kudus, Karanganyar, and Salatiga, engage in a combination business in the hope of increasing profits while avoiding unsold DOC sales [9].

Farmers who want to produce finisher chickens usually do so because their capital is limited and their capital turnover is faster. The market's desired slaughtering weight is between 0.8 and 1 kg, which will be achieved at 2.5 to 3 months of age. Some farmers in the local chicken fattening business keep finisher chickens in multiple batches so that they can be used as weekly or monthly income. If they want to make a weekly income, the farmer will maintain a minimum of four batches in one month so that they can sell chickens every week. According to Yuwono et al. [10], the KUB chicken business for slaughter can be used as an additional source of income, with a profit calculation of IDR 7,000–10,000 per head within 3 months of fattening.

The small number of farmers involved in breeding is due to the fact that this business requires a large investment and a long period of time to generate profits. As an example, if we start with DOC, it will take at least 6 months to become layers, whereas buying pullets quickly produces at a high cost. According to direct communication with breeders in Semarang (Mr. Sugiyanto), the breeding business requires patience and skills, particularly in the hatching process. The high profit from the sale of pullets, as well as the small number of competitors, piqued the interest in the breeding business. There is a high demand for pullets, but the supply is still limited. According to Subiharta et al. [9], farmers sold packages of breeding chickens (1 cockerel and 5 pullets) for IDR 625,000–700,000.

The age distribution of the population is important in describing the business objectives and planning. The population distribution is described up to the age of 3 months for fattening purposes, assuming that the chickens are ready to slaughter at that age. While it can be described by the number of hens kept for the purpose of producing non-hatching eggs and DOC. Table 4 shows the farmer population distribution of KUB chickens. The population of chickens aged 1–4 weeks, 1–3 months, and >3–6 months, with the largest population on a scale of >100–300 heads, accounting for 40%, 55%, and 60%, respectively. However, there are farmers who keep more than 300 heads. This is, of course, consistent with our previous explanation that some farmers keep KUB chicken as a sideline, as evidenced by the population of chickens kept at less than 300 heads. Furthermore, the population of layers kept primarily by breeders for the purpose of producing non-hatching eggs and DOC is less than 100 heads (Table 4). Of course, this is related to the previous explanation that farmers are working on KUB chickens as a sideline. According to Mr. Sumali, Chairman of the KUB Chicken Breeders Association in Central Java, the minimum number of KUB layers kept for the purpose of egg production for consumption or DOC production as the main business is 500 heads.

There are two things to consider regarding feed: feed has a large influence on chicken productivity [11], and feed is the most expensive component of the chicken business, accounting for 60–80% of total maintenance costs. When KUB chickens receive feed intake that is in accordance with nutritional needs and the amount of feed given, genetic potential of KUB chickens can appear [12]. Figure 1 depicts the feed provided by KUB chicken farmers in Central Java. According to further investigation, most farmers have not paid attention to the nutritional content of the feed. Farmers provide feed based on their previous experience with local chicken farming as well as information from the poultry shop and fellows.

Farmers must pay attention to the ratio of rooster and hen kept in order to produce hatching eggs. This is significant in the production of hatching eggs because if the fertility is less than 80%, the hatchery business is considered a loss. Table 5 shows the sex ratio of KUB chickens at the relevant farmers, which is 1:5. According to some studies, the sex ratio of chickens must be set at 1:5 in order to produce hatching eggs with fertility rates greater than 80% [13, 14]. Table 5 also shows that 80% of respondents are suitable, but there are farmers who use a ratio of 1:3 to 1:4 because the male died during the production process. A male to female ratio of less than 1:5 is not recommended because fertility does not differ significantly and will only increase feed costs.

The ultimate goal of the KUB chicken business is, of course, to earn extra money. The amount of income is inextricably linked to the prices of the goods produced. Table 6 shows the prices of farm products such as non-hatching eggs, DOC, finisher chickens, pullets, and cockerels. What is interesting about the prices of KUB chicken products is that there is no uniformity in prices between farmers, which is due to a lack of price communication between farmers. This is consistent with information provided by the

Table 4. Population of KUB chickens.

Ages	Scale (heads)	%	n
1–4 weeks	<100	16	25
	100–300	40	
	>300–500	24	
	>500–1,000	20	
1–3 months	<100	20	22
	100–300	55	
	>300–500	18	
	>500–1,000	7	
>3–6 months	<100	33	15
	100–300	60	
	>300	7	
>6–12 months	<100	60	15
	100–300	33	
	>300	7	
>12 months	<100	72	14
	100–300	21	
	>300	7	

Table 5. Sex ratio of KUB chickens.

Ratio (rooster:hen)	%
1:3	10
1:4	10
1:5	80

KUB chicken farmers association in Central Java regarding the varying prices of KUB chicken products due to a lack of farmer agreement on product prices. So far, farmers have determined product prices based on their experience buying products or prices in the market; however, there are several farmers who determine product selling prices based on production costs.

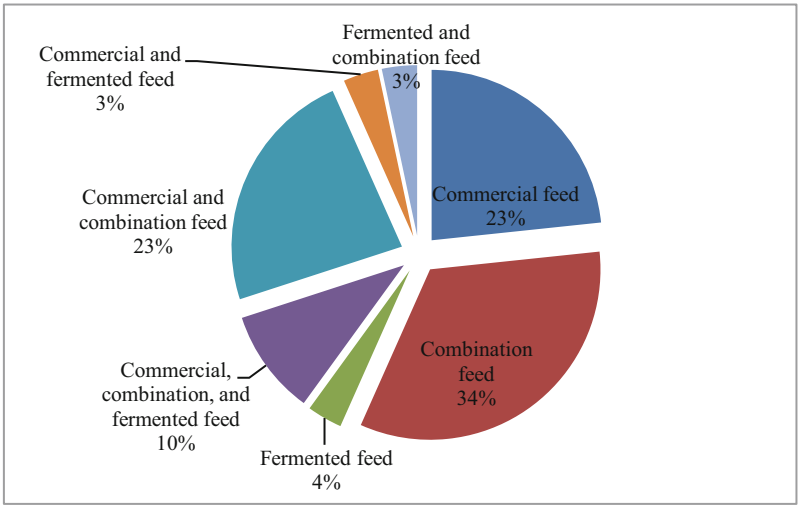

Fig. 1. Feed provided by KUB chicken farmers in Central Java.

Table 6. Product prices.

Products	Unit	Price range (IDR)
DOC	head	6,000–9,000
Non-hatching egg	item	2,000–3,500
Finisher chicken	kg	34,000–50,000
Pullet	head	70,000–90,000
Cockerel	head	100,000–120,000

4 Conclusions

The KUB chicken development program has attracted Field Agricultural Extensionists to raise these chickens as a side business while also increasing knowledge about KUB chicken to aid in dissemination. Farmers who raise KUB chickens for breeding (hatching eggs and DOC) and fattening. Farmers provide commercial feed mixed with other feed ingredients found in the surrounding environment to increase efficiency. The price of non-hatching eggs, DOC, finisher chickens, pullets, and cockerels has not been consistent among farmers, and tends to differ in determining the selling price.

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References

1. Direktorat Jenderal Peternakan dan Kesehatan Hewan, *Statistik Peternakan dan Kesehatan Hewan*, (2020).
2. J. H. P. Sidadolog, "Pemuliaan sebagai sarana pelestarian dan pengembangan ayam lokal," Universitas Gadjah Mada, (2011).
3. C. Sumantri, and S. Darwati, "Perkembangan terkini riset ayam unggul IPB-D1," *Pros. Sem. Nas. Industri Peternakan I*, pp. 3–7, (2017).
4. T. Sartika, Komarudin, N. Pratiwi, N. Azizah, and Z. Hasnelly, "Ayam Kampung Unggul Balitbangtan, Kinerja produksi Ayam KUB di berbagai Provinsi," *Bunga Rampai*, Pusat Penelitian dan Pengembangan Peternakan, (2021).
5. T. Sartika, Desmayati, S. Iskandar, H. Resnawati, A. R. Setioko, Sumanto, A. P. Sinurat, Isbandi, B. Tiesnamurti, E. Romjali, "Ayam KUB-1," *Buku*, Badan Litbang Pertanian, (2013).
6. Dirdjopratono, Muryanto, Subiharta, and D. M. Yuwono, "Peningkatan produktivitas ayam buras dengan perbaikan pakan dan tatalaksana pemeliharaan," *Laporan Penelitian*, Sub Balai Penelitian Ternak Klepu, (1994).
7. M. Prasojo, "Pemanfaatan limbah rumah makan untuk ransum ayam buras," https://unsurtani.com/2018/11/pemanfaatan-limbah-rumah-makan-untuk-ransum-ayam-buras, last accessed 2022/09/01.
8. Minister of Agriculture Decree No.274/Kpts/SR.120/2/2014 concerning KUB-1 chicken line release, Ministry of Agriculture, Republic of Indonesia, (2014).
9. Subiharta, D. Prasetianti, A. Prabawa, R. N. Hayati, P. Sudrajad, F. D. Astuti, J. Purmiyanto, P. Lestari, and I. Musawati, "Pengembangan perbibitan ayam KUB di Jawa Tengah," *Laporan Kegiatan*, Balai Pengkajian Teknologi Pertanian Jawa Tengah, (2021).
10. D. M. Yuwono, Subiharta, D. Prasetyanti, and P. Lestari, "Pengkajian usaha skala rumah tangga persilangan antara ayam KUB dengan ayam SenSi sebagai sumber pendapatan alternatif," *Laporan Kegiatan*, Balai Pengkajian Teknologi Pertanian Jawa Tengah, (2018).
11. S. Iskandar, C. Hidayat, and T. Cahyaningsih, "Pengaruh pemberian ransum pre- starter pada efisiensi kinerja ayam lokal KUB," *JITV*, 19(3), 203–209, (2014).
12. C. Hidayat, S. Iskandar, T. Sartika, and T. Wardhani, "Growth response of improved breeds of native chicken to diets differed in energy and protein content," *JITV*, 21(3), 174–181, (2016).
13. S. S. Mansyoer, T. Sartika, M. Nanda, S. Hartati, Yusra, Yuniati, E. S. Cecilia, B. Ruikana, and I. Susanti, "Petunjuk teknis pengembangbiakan rumpun ayam lokal," Direktorat Perbibitan, Direktorat Jenderal Peternakan, Kementerian Pertanian, (2009).
14. Subiharta, D. Prasetianti, A. Prabawa, R. N. Hayati, P. Sudrajad, F. D. Astuti, J. Purmiyanto, P. Lestari, and I. Musawati, "Perbibitan ayam KUB di Jawa Tengah dalam mendukung program BEKERJA," *Laporan Kegiatan*, Balai Pengkajian Teknologi Pertanian Jawa Tengah, (2019).