



# The Performance of KUB Chicken 2–12 Weeks at Agriculture Extension Center of Semarang Regency

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**Abstract.** One of the roles and functions of agricultural extension centers (AEC) is providing and disseminating technological information. The IAARD provides assistance kampung unggul Balitbangtan (KUB) chicken that has higher egg productivity. This paper was made to observe the performance of KUB chickens at Agriculture Extension Center of Semarang Regency which were received by Bergas, Ungaran Timur and Ungaran Barat District. The observations are made in Oktober-Desember 2021. KUB Chicken ages are 2–12 weeks with each samples were 20 birds. The variables observes consist of body weight (g), body weight gain (g), and mortality (%). The results obtained for the average body weight at 12 weeks were 651,40 g/bird; 766,85 g/bird and 1.230,10 g/bird for AEC Bergas, Ungaran Timur and Ungaran Barat respectively. The body weight gain were 19,70 g/bird/day; 24,56 g/bird/ day and 35,64 g/bird/day for AEC Ungaran Timur, Bergas and Ungaran Barat respectively. Mortality was highest at AEC Bergas at 15% while Ungaran Timur at 7% and Ungaran Barat at 5% respectively. It can be concluded that the KUB chicken in agricultural extension centers of Ungaran Barat District shows good performance in terms of body weight, body weight gain and low mortality rate due to good management.

**Keywords:** Agricultural extension centers · KUB Chicken · body weight

## 1 Introduction

Agricultural extension contributes to improving the welfare of farmers and other people living in rural areas as extension advisory services and programs forges to strengthen the farmer's capacity to innovate by providing access to knowledge and information [1]. Dissemination of innovation as one of the main mandates of the Assessment Institute for Agricultural Technology (AIAT) has developed in line with the dynamics that accompany the presence of AIAT in the regions [2]. Dissemination of innovations resulting from agricultural research/study is an important communication activity in encouraging the process of spreading and applying technology in a rural social system [3]. Extension services rendered to farmers are perceived in effective in meeting needs of the farmers

[4]. Extension institutions at the sub-district level are in the form of agricultural extension centers (AEC). One of the roles and functions of agricultural extension centers (AEC) is providing and disseminating technological information (UU No. 16/2006 Sistem Penyuluhan Pertanian, Perikanan dan Kehutanan (SP3K)). The AEC that is available in each sub-district makes it easier for farmers to interact or communicate with AEC and existing extension workers to obtain information [5].

KUB chicken is the Superior native chicken that was invented by the Indonesian Agency for Agricultural Research and Development (Indonesian Research Institute for Animal Production) which is the result of selection from a native chicken family for 6 generations [6]. KUB chickens are raised to produce eggs and meat production [7]. The advantages of KUB chickens include more efficient feeding, resistance to disease, lower mortality rates, and higher egg production compared to ordinary free-range chickens and can be used as an alternative to fulfill animal protein needs for the society [8]. This magnificent excellency makes KUB Chicken should massively socialiced. Through the AEC pilot project, farmers and the user can get information about the performance of KUB chickens and can adopt existing technologies and innovations that available. Agriculture Extension Center of Semarang Regency has received the pilot project of KUB Chicken. The information about how the development of KUB chicken in AEC needs to be observed. This paper was created to see the performance of KUB chickens in the Agriculture Extension Center Bergas, Ungaran Timur and Ungaran Barat District.

## 2 Materials and Methods

KUB Chicken ages are 2–12 weeks with each samples were 20 birds. Animal was raised in colonies and cages. Commercial feed was given at 0–4 weeks and following weeks (5–12 weeks) was given by mixed feed of commercial feed, corn and bran (60%:20%:20%) with a crude protein content of about 17% (Table 1).

The amount of feeding adjusted to animal age status. Data collected was body weight (by weighing once a month), body weight gain (was obtained through a comparison between final and initial weight in this period), and total population (mortality rate in percentage). Data was analyzed by the analysis of variance (ANOVA), followed by Duncan's Multiple Range Test [9] Statistical Package for the Social Sciences (SPSS) was used for data analysis.

**Table 1.** Nutritional Content of Feed

No	Nutrition Content	Amount
1.	Dry matter (%)	86.00
2.	Ash (%)	7.36
3.	Crude Protein (%)	17.06
4.	Crude Fat (%)	5.88
5.	Crude Fiber (%)	6.40

### 3 Results and Discussion

#### 3.1 Application of KUB Chicken Technology Innovation

One of the roles and functions of AEC, is carrying out the learning process through piloting and developing farming models for the main users/businesses to support food self-sufficiency programs, with the KUB chicken pilot at AEC expected to introduce one of the technological innovations of Indonesian Agency for Agricultural Research and Development (IAARD) to farmers and groups. The application of KUB chicken technology innovation was depicted in Table 2. This application includes breeds, housing, feeding and animal health.

Assistance in the application and development of KUB chicken cultivation technology is carried out through technical guidance and assistance in terms of: how to manage Day Old Chick (DOC), KUB chicken productivity performance and vaccine application. Assistance in the application of KUB chicken breeding systems technology carried out in pilot activities, among others on (i) feeding methods, (ii) the application of drinking water, (iii) vaccination, and (vii) management of chickens that are currently sick/animal health.

#### 3.2 Body Weight, Body Weight Gain and Mortality Rate

The average body weight of KUB chicken in 3 AEC's shown in Table 3. The average body weight of KUB chicken in AEC Ungaran Barat in following weeks is highest compared to other AEC's (Bergas and Ungaran Timur). This performance is also highest compared to other studies [10–12]. This variation data is presumably due to genetic, environmental and maintenance management dissimilarity [11]. Body weight is one of

**Table 2.** The application of KUB chicken technology innovation.

No	Technology	Description
1.	Breeds	Kampung Unggul Balitbangtan (KUB) chicken
2.	Breeds Origin	Ungaran Research and Assessment Installation for Agricultural Technology
3.	Population	100 birds/AEC
4.	Sample	20 birds/AEC
5.	Housing	Brooder cages Grower cages: ventilation, equipped with a place to perches
6.	Feed	Commercial and Mixed feed
7.	Vaccination	1 day after hatching, Newcastle diseases and Infectious Bronchitis (ND-IB) vaccine was administered through eye drops; age 10 days gumboro vaccination through drinking water; 4 weeks of age ND vaccine application to drinking water; 5 weeks of age, AI vaccine injection application.

**Table 3.** The Average Body Weight and Body Weight Gain of KUB Chicken

The Average Body Weight	AEC Bergas	AEC Ungaran Timur	AEC Ungaran Barat	p-value
2 weeks (g)	-	-	127,80	-
4 weeks (g)	184,15 <sup>a</sup>	275,00 <sup>b</sup>	330,80 <sup>c</sup>	<0,001
6 weeks (g)	-	-	518,90	-
8 weeks (g)	527,86 <sup>a</sup>	550,80 <sup>a</sup>	829,70 <sup>b</sup>	<0,001
10 weeks (g)	-	-	1.085,80	-
12 weeks (g)	651,40 <sup>a</sup>	766,85 <sup>b</sup>	1.230,10 <sup>c</sup>	<0,001
The Average Body Weight Gain (BWG)	24,56 <sup>a</sup>	19,70 <sup>a</sup>	35,64 <sup>b</sup>	<0,001

Description: Different letters in the same rows indicate a significant difference ( $p < 0.001$ )

the quantitative traits that are controlled by many genes whose differences between phenotypes are not very clear, are additive and have continuous variation. Quantitative traits are influenced not only by the genotype but also by the environment, as well as the interaction between the genotype and the environment [13]. The most dominant difference in management is AEC Bergas still not optimal for maintaining resources while AEC Ungaran Barat is managed by farmer group/ KTNA and extension workers. Extension workers can apply the knowledge gained during the technical guidance KUB chicken breeding management. And this is also important for farmer to adapt the technologies. One of the benchmarks for successful dissemination of agricultural innovations is the rate of adoption/ implementation of innovations (Table 3).

There are four pre-requisites for the success of the technology diffusion process, namely: (1) the technology developed is technically relevant to user needs; (2) Apart from being technically relevant, the technology offered must be commensurate with the absorption capacity of the targeted users; (3) The technology offered is able to compete with similar technologies available in the market; and (4) the application of technology offered will increase profits compared to current business practices [14]. It is expected that the technology applied to AEC and shows a good performance can inspire farmers to be able to apply KUB chicken to their livestock business and also increase their business profit.

The body weight gain of KUB chicken at 3 AEC's are presented in Table 3. BWG is an important factor to consider in observing chicken performance [11]. The increase in BWG of KUB chickens was also obtained by AEC Ungaran Barat. The average BWG of the KUB chickens achieved in this observation was higher (35,64 g/bird/day) than those reported [15] at different type of animal (35,11 g/bird/day on broiler). Body weight gain is a response to the chicken's ability to digest food. The higher BWG in the study was probably caused by feeding animal with commercial feed containing 17% crude protein and were highly fulfilled for their nutritional needs from the age of 0 day. The main factors that affect body weight gain are the amount of chicken ration consumption, the energy and protein content in the feedstuff, because energy and protein are very

important in influencing the growth rate [16]. The growth rate of KUB chickens is up 12 weeks of age still has increased tendency [10]. Yet this study was not observed growth rate in the following week.

After 12 weeks of growing phase, population of animals was decrease. Population decline caused by the cages were used for other activities. The KUB chicken was limited on susceptible to diseases [17], however in 3 AEC's were highest mortality by AEC Bergas, AEC Ungaran Timur and AEC Ungaran Barat. Generally, chicken deaths are caused by physically pinched and pecked at each other even though it was reared in 10 chickens/m<sup>2</sup>. Severe feather pecking is related to feeding and foraging behaviour [18]. No evidence was found that stocking density caused changes in any measured immune parameters. Native chicken mortality of 5 to 8 weeks under an improved management system was 7.4 to 8.5% [8].

## 4 Conclusions

The results obtained for the average body weight at 12 weeks were 651,40 g/bird; 766,85 g/bird and 1.230,10 g/bird for AEC Bergas, Ungaran Timur and Ungaran Barat respectively. The body weight gain were 19,70 g/bird/day; 24,56 g/bird/day and 35,64 g/bird/day for AEC Ungaran Timur, Bergas and Ungaran Barat respectively. Mortality was highest at AEC Bergas at 15% while Ungaran Timur at 7% and Ungaran Barat at 5% respectively. It can be concluded that the KUB chicken in agricultural extension centers of Ungaran Barat District shows good performance in terms of body weight, body weight gain and low mortality rate due to good management.

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