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The Development of a Newly Formed Superior Local Chicken in Indonesia – A Review

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Abstract: This paper provides an explanatory review of the development of a new superior local chicken in Indonesia called KUB Chicken. The Minister of Agriculture of the Republic of Indonesia released KUB Chicken for public consumption in 2014. The selection aims to reduce the incubation nature/period of the chickens to have higher egg productions. KUB chickens can produce between 160-180 eggs per year, with an average daily egg production of 45-50% and up to 65% at peak production. The breeding program of this chicken started in 2017, and the processes involved were designed to strengthen and increase KUB chicken breeders' production capacity, build chicken breeding locations, and develop farmer groups. The program strategy resulted in the establishment of various breeding centers for the distribution of KUB chicken, which is divided into three strata, namely: a) Strata I, in the form of development of DOC (Day Old Chicken) production centers in 7 locations, b) Strata II, in the form of nucleus-plasma DOC growing activities by farmer breeders in 11 provinces, and c) Strata III, in the form of distributing DOC to breeder households, which are spread across 17 provinces, involving 100 households in each province. In connection with the increasing demand for local chicken meat in Indonesia from year to year, the rearing of KUB chicken is certainly a good business opportunity. The prospect of the KUB chicken business is promising, both economically and socially, because it can meet the demand for highly nutritious food and has local and regional market absorption capacity.

Keywords: breeding program, business analyses, KUB chicken, performance.

印度尼西亞新形成的優質地方雞的發展——綜述

摘要: 本文對印度尼西亞一種新的優質地方雞 庫伯 雞的開發進行了解釋性審查。庫伯雞於 2014 年由印度尼西亞共和國農業部長發布供公眾食用。選擇旨在減少雞的孵化性質/時間以具有更高的產蛋量。庫伯雞 雞每年可產 160-180 個雞蛋，平均日產蛋量為 45-50%，高峰時可達 65%。該種雞的繁育計劃於 2017 年啟動，所涉及的過程旨在加強和提高庫伯雞雞種雞的生產能力，建設養雞場，發展農民群體。該計劃戰略導致建立了各種繁育中心，用於分銷 庫伯雞，分為三個層次，即：一种) 層次 I，以在 7 個地點發展 日齡雞生產中心的形式，乙) 分層 II，以 11 個省的農民育種者的核質 日齡雞 種植活動的形式，以及 c) 分層 III，以向分佈在 17 個省的育種家庭分發 日齡雞 的形式，每個涉及 100 戶家庭省。鑑於印尼對本地雞肉的需求逐年增加，養殖庫伯雞無疑是一個很好的商機。 庫伯雞肉業務在經濟和社會上的前景都是廣闊的，因為它可以滿足對高營養食品的需求，並具有地方和區域市場吸收能力。

关键词：育種計劃、業務分析、庫伯 雞、性能。

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1. Introduction

The original Indonesian chicken, the Kampung Chicken or Local Chicken, is mostly bred in rural communities. The local chicken population in 2019 was 301,761,386 birds with a contribution to national poultry meat production of 8.33% or equal to 292,329 tones [1]. The population of local chickens is only about 9.52% of the population of broilers (3,169,805,127 birds) and slightly more than laying chickens (263,918,004 birds). Meanwhile, Indonesia's total production of local chicken eggs is only 251 tones or contributes only 4.44% to poultry egg production.

Raising Local Chickens by the community, in general, is a part-time business, as it primarily aims at producing meat and eggs as a source of family nutrition and a source of income or life savings. For most people, the taste of local chicken meat is not comparable to the imported broiler chicken meat. However, the taste of imported layer chicken eggs has been able to replace local chicken eggs. Most people consumed the local chicken eggs as a medicine mixed with some other herbal medicines.

Local chicken meat is very popular among Indonesians because it is more suitable for preparing various types of Indonesian dishes. The development of culinary using local chicken, which has rapidly grown in recent years, has resulted in efforts to make the local chicken available at a high level of productivity. In connection with this, the KUB chicken line was released with an intensive production system. KUB stands for the Kampung Unggul Balitbangtan or the Improved Kampung Chicken of the Indonesian Agency for Agricultural Research and Development (IAARD). The release of KUB chicken lines is based on the Decree of the Minister of Agriculture No. 274/Kpts/SR.120/2/2014, dated 24 February 2014 [2].

The Ministry of Agriculture of the Republic of Indonesia distributed KUB chickens to low-income families through the #BEKERJA Program (Poverty alleviation program) in 2018-2019. Through this program, 3 million KUB chickens were distributed in 2018 and 6 million chickens in 2019 [3]. This paper will explain and review the development of the superior local KUB chickens in Indonesia.

2. The Origin and Production Performance of KUB Chicken

The development of the KUB line of superior local chicken began in 1997/1998 when the research activities for native chicken breeding started at the Indonesian Animal Research Institute (IARI) in Ciawi-Bogor. KUB chickens resulted from the selective breeding of native chickens for six generations, carried out within 13 years (1997-2010). The proposed outcome was to reduce the incubation period of the chickens so that they will have an increased egg production rate. There is a negative correlation between egg production and incubation time, which means that the incubation nature of the chickens will lower the chicken's egg production [4].

The native chicken used in the study was imported from several regions in West Java Province, especially from the Regency of Cianjur, Majalengka, Depok, and Bogor. The selection was carried out at an intensity of 50% for 24 weeks, using egg production as the main criteria for selection. Chickens were raised under conditions designed for commercial layer production but with various modifications [5, 6]. Chickens got commercial layers' feeds, mixed with bran, fishmeal, and minerals, with a protein content of about 17.44% and 2,850 kcal ME/kg energy.

KUB chickens have a high egg production rate of around 160-180 eggs per year, with an average daily egg production of 45-50% and a peak production of up to 65%, as shown in Figure 1 [5]. The nature of incubation was only 10% of the total population; the first age of laying eggs is around 22-24 weeks, with an egg weight of about 35-45 grams.

There is a frequency of laying eggs every day or every second day but without a period of clutching. The average weight of the unsexed one-day-old chickens (DOC) is around 33.5 g/bird, but the average body weight achieved by male chickens is higher than that of females. Male KUB chickens at the age of 10 weeks have a bodyweight of 487-1.198 g/bird with an average weight of 830.55 g/bird.

Meanwhile, female KUB chickens of the same age only weigh 442-1,132 g/bird with an average weight of 691.51 g/bird [6]. Compared to the ordinary Kampung chickens (not KUB chickens), it usually takes about 16-20 weeks to reach a similar weight. Therefore, KUB roosters can be used as meat chicken at a mean table age of about 70 days [6], [7].

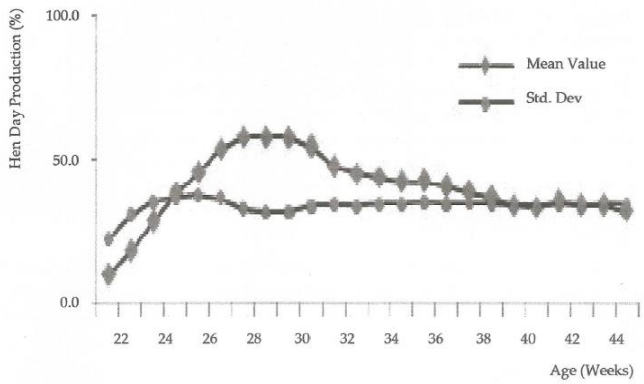

Fig. 1 The average of egg production and standard deviation of KUB chicken from 22 to 44 weeks of age [5]

3. KUB Chicken Breeding Program

Since 2017, IAARD has implemented the KUB chicken breeding program, coordinated by the

Indonesian Center for Animal Research and Development (ICARD), and implemented by IARI and several Assessments Institute for Agricultural Technologies (AIATs) in selected Provinces. Breeding centers' facilities and infrastructures are built in five offices (IARI Ciawi-Bogor, AIATs in Central Java, East Java, South Sulawesi, and West Nusatenggara).

In addition, KUB chickens were also distributed to various farmers as the nucleus and plasma breeder groups in five provinces (North Sumatra, West Java, Central Java, East Java, South Sulawesi, and West Nusatenggara). The Nucleus breeders play the DOC production role, while the Plasma farmer groups are responsible for growing the DOC to produce table chickens [2].

In 2018, the breeding program continued to strengthen and increase the production capacity of KUB chicken breeders, build chicken breeding locations at AIATs, and develop farmer groups. The location for the distribution of KUB chicken is divided into three strata.

Strata I, the development of DOC production centers, sited in 7 locations, including IARI Ciawi-Bogor, AIATs in Central Java, East Java, South Sulawesi, West Nusatenggara, North Sumatra, and Banten. Strata II, nucleus-plasma DOC growing activities by farmer breeders in 11 provinces, including West Sumatra, South Sumatra, Riau, Lampung, Banten, DIY, Bali, Central Kalimantan, South Kalimantan, Central Sulawesi, and Gorontalo Provinces. Strata III, the distribution of DOC to breeder households, which are spread across 17 provinces, which comprises 100 households in each province, to include the provinces of North Sumatra, West Sumatra, Riau, South Sumatra, Lampung, Banten, West Java, Central Java, DIY, East Java, Bali, South Kalimantan, Central Kalimantan, South Sulawesi, Central Sulawesi, Gorontalo, and West Nusatenggara.

KUB chicken breeding program goes beyond providing facilities, infrastructures, and cultivation facilities such as chickens, feed, vaccines, and medicines. It also includes various technical guidance and assistance. The three strata are designed to support the success of one of the program objectives, which is to increase the welfare of breeders through the continuous increase in income from the KUB chicken farming business.

The initial production population target provided at the IARI Ciawi-Bogor is 200 males and 1,000 KUB females. For starters, a minimum of 120 KUB males and 600 KUB females are available at the AIATs, after which, the AIATs must prepare other pure KUB chickens as replacement chickens for those culled after 18-24 months of initial production. At the initial stage, the nucleus breeders receive 50 male and 250 female KUB parent chickens obtained from the IARI Ciawi-Bogor and the AIATs to produce the DOC final stock, then distributed to the Plasma breeders and households.

4. Technological Innovations of KUB Chicken

Recommendations for feed requirements for KUB chickens that the nutritional content of the feed must be adjusted as the standard for feed formulations, including crude protein, metabolic energy (ME), essential amino acids (methionine and lysine), and minerals (available calcium and phosphorus) [8]. The formulated feed must meet the minimum nutritional requirements for each phase to aid the digestion and optimal utility of the chicken. The use of local resources as raw material for poultry feed is prospective to develop in the community to integrate with agricultural products by the local community [9].

In feeds production technology, it is also important to consider the type of feed or method of feeding. The feed given to hatchlings (immediately after hatching) is very important because it can increase the absorption of yolk sac residuals, stimulate the growth of the digestive tract and increase the immunity of chickens [10]. The feed is given at an early age, known as the pre-starter feed.

The ingredients used in feed production will affect the efficiency of digestion and absorption of nutrients by young chickens [11]. The carbohydrate (starch) supplement given in the early growth period gave a better effect than protein (casein) or fat supplement [10]. The pre-starter feed in the form of ripe papaya for KUB chickens which was given for 24 hours and 48 hours, showed that at 84 days old, the chickens could achieve high European Performance Efficiency Factor (EPEF) values (442 and 356 g/bird) [12]. These may be due to an increase in the effective use of ration, together with high levels of vitality. This shows that the pre-starter feed (ripe papaya) increases the efficiency of feed use by KUB chickens.

Another way to increase feed efficiency is by reducing feed costs. The use of golden snails as an ingredient for making concentrate into flour for KUB chickens [13]. The basic ingredients of golden snails can save feed costs by 30.53% for layers of chicken and 24.34% for KUB growers. Concentrate formulation based on golden snail was 70% of golden snail flour, 20% rice bran, and 10% corn. The golden snail-based concentrate used in layer and grower chickens feed was 32% and 42%, respectively.

The use of additional feed, which aims to improve livestock performance, is increasing, especially after antibiotics were prohibited. A BS4 enzyme has been provided to replace the antibiotics. This enzyme is a mixture of carbohydrate Enzymes comprising of β-mannanase, cellulose, β-mannosidase, β-glucosidase, and α-galactosidase. Using the BS4 enzyme for laying KUB chickens did not affect egg production and quality [14]. Meanwhile, for KUB chickens during the growing period, the BS4 enzyme increased the feed use efficiency [15].

Up until now, the recommendation for nutritional standard of native chicken feed used in Indonesia is between 2,900-3,100 kcal/kg and feed protein is between 18.0% - 21.4% [16], [17]. It was reported that with a diet containing 15% protein and energy of 2,500 kcal ME/kg, egg production of local chicken could reach 48.5%.

KUB chickens have better prospects and have a broad market due to the high level of demand [18]. The selling price of KUB chickens, both male and female, is relatively higher when compared to other types of local chickens. KUB chicken harvest period is relatively faster and friendly to the environment because it does not cause a strong smell in the cage.

KUB chicken development management is generally prioritized for smallholder farms because the technology is simple, easy to maintain, and suitable for family business scale in rural areas. It has high adaptability and is more resilient against disease than broiler or layer chickens [19]. The growth of KUB chickens is faster, produces more eggs, and is resistant to environments with cold temperatures. Through these various advantages possessed by KUB chickens, the community feels confident that the development of KUB chickens will be continued for an unlimited time to come.

5. The Performance of KUB Chicken in Various Areas of Indonesia

KUB chicken rearing trials in several areas started in 2013 at the Inti Tani Farmer Group in Pabuaran Village, Pabuaran District, Serang Regency of Banten Province. The number of KUB chickens kept was 6,000, producing 2,000 DOC chickens per week. The resulting DOC was sold in the Banten Province and its surroundings [20]. In 2015, the development of KUB chickens in Banten Province was also carried out in Tiga Raksa and Kronjo Districts of Tangerang Regency. The purpose of raising KUB chickens in this area was for growing from DOC to table age of 10-12 weeks. Then, in 2016, KUB chicken development was carried out at the Tunas Alam Farmer Group in Balaraja District, Tangerang Regency. KUB chickens raised at this place were 300 birds, reared by three chicken breeders.

The development of the KUB chicken business in West Nusatenggara Province was quite rapid and successful. One example was that reared by the Jaya Mandiri of the KUB chicken farmer group. In early 2012, this group had only 11 members, but in 2015, it increased to 75 members [21]. In this group, the members were divided into several business units, including egg-producing businesses (29 people), DOC hatchery/producing businesses (20 people), and chicken meat-growing units (26 people).

The purpose of this division of business units was to increase efficiency so that all group members can carry out their business activities properly and productively. Another development that is considered to be growing rapidly was the KUB chicken population. In 2012, there were only 843 birds owned by the farmers in the group, but in 2014, it increased to 5,233 birds.

There are different types of feed given to KUB chicken, depending upon the age of the chicken. The commercial feed is given to the starter chickens until they are two months old. However, the grower and layer chickens are fed with the commercial feed, which is mixed with bran and corn, so that the price of the feed can be lower. In the #BEKERJA Program conducted in West Nusatenggara Province, it was reported that KUB chickens raised by beneficiary breeders showed good development but slower laying time (at 24 weeks of age), a lower percentage of eggs, and a higher mortality rate [22].

This was due to the system and maintenance management. The productivity of KUB chickens in the Bima Regency of West Nusatenggara Province is still considered very low if maintained in an extensive system. However, it will have better productivity if it maintains intensively. In addition, KUB chickens have advantages over ordinary free-range chickens (non-KUB chickens) in the form of better body weight gains at two months of age, more efficient feed consumption, and greater profits [23].

The performance of KUB chickens reared in the experimental cages at the AIAT office of East Nusatenggara Province had an average egg production of 45.92%; egg weight of 45.87 grams. DOC body weight ranges from 30.1-35.4 grams/bird; The male body weight aged 70 days was 1,066 grams/bird and female 745 grams/bird, with the FCR value of 2.18 at the age of 30-36 weeks [24, 25].

KUB chickens raised in Banjarbaru and Hulu Sungai Utara (HSU) Regencies, South Kalimantan Province, showed productivity [26]. There were differences in the productivity of KUB chickens developed in the two locations due to differences in KUB chicken rearing management patterns. KUB chickens in Banjarbaru were managed in intensive cages owned by the AIAT of South Kalimantan Province, while those developed in the HSU Regency were semi-intensively managed.

The average egg production and peak KUB chickens raised in Banjarbaru Regency were better than those kept by farmers. KUB chickens reared at AIAT of South Kalimantan Province also had a very low mortality rate. The hatchability of KUB chickens in South Kalimantan was 63.12%, similar to the hatchability of KUB chickens (62%) [7].

The management system of KUB chicken, at three different locations to include in the districts of East Lampung, South Lampung, and Bandar Lampung, was very influential on the performance of KUB chicken production [27]. The data obtained was that the bodyweight of KUB chickens increased until the age of 16 weeks (1,429 g/bird). The highest mortality occurs

until the age of 4 weeks, after which it gradually decreased. Compared to those raised at the other two locations, KUB chickens in the South Lampung region were poor. The mortality rate of KUB chickens in South Lampung was higher (16.73%), and the age at the first laying of the chickens was relatively long, at 28 weeks. This may relate to the difference in management systems between locations so that the resulting performance was different.

KUB chicken was raised in Papua Province and fed with Lamtoro (Leucaena leucocephala) leaf meal [28]. The results showed the advantages of KUB chickens in that they were effective in converting feed than other local chickens and were more adaptive to changes in feed. Another study is utilizing unconventional feed ingredients in cow manure for KUB chicken was conducted in the Bali Province [29]. The feed used was a mixture of concentrate, bran, corn, and cow dung substitution (fermented) as much as 20% and 2 ml/liter of probiotic mixed in bran to produce the best bodyweight carcass percentage feed conversion. Changes in the protein level of KUB chicken feed during the growing period (0-12 weeks) did not affect feed consumption, FCR, egg production, and daily weight gain at the beginning of the laying period [30]. However, changes in feed protein levels at an older age significantly affected egg weight, egg width, and egg volume.

6. Business Feasibility Analyses of KUB Chicken

In connection with the increasing demand for local chicken meat in Indonesia from year to year, the rearing of KUB chicken is certainly a good business opportunity. The prospect of the KUB chicken business is promising, both economically and socially, because it can supply high nutritious food needs and has local and regional market absorption capacity [31]. One example is the successful development of KUB chickens, which the AIAT of West Nusatenggara Province fosters.

The group's name is the Jaya Mandiri KUB chicken farmers' group, located in Central Lombok Regency. KUB chicken breeding business to produce DOC, carried out by this group, was very profitable and feasible to operate with an R/C ratio value of 2.76 for one production period (18 months). Field observations indicated that the KUB chicken DOC breeding business has a wide market share and demand, but the production results with the number of female chickens available have not met the existing demand. It seems that training in hatchery management for the breeder group and increasing the number of female chickens raised are required [21].

Research conducted in Lampung reported that KUB chicken growing business with a scale of 200 chickens for three months was feasible and produced an R/C value of 1.21 (Table 1) [27]. In this calculation, it is known that the largest cost incurred was the cost of feed (63.88%), then chicken seeds (19.83%), and labor (12.75%).

The maintenance of KUB chickens as egg producers with 45 chickens, the daily egg production was 20.25%, assuming that the selling price of eggs was IDR 1,500/egg [27]. The R/C value obtained was 1.51 and could provide a profit of IDR 10,300 per day, which means that this business is very feasible. The results of this study indicated that the KUB chicken business, both for rearing and producing eggs, is feasible and profitable. The R/C value generated in this study was higher than that reported for the KUB chicken rearing business, which was carried out intensively, with an R/C value of 1.14 [32]. The calculation results showed that the total break event point (BEP) was with the 173 chickens reared, while the BEP price was IDR 39,665/bird.

Table 1 Income analyses of KUB chicken growing business for 12 weeks period in Lampung Province

No.	Parameters	Volume	Unit Price (IDR)	Total Costs (IDR)
1	Expenses:			
	- Feed (kg)	820	5,500	4,510,000
	- DOC (birds)	200	7,000	1,400,000
	- Medicines (package)	1	100,000	100,000
	- Labour (person)	1	900,000	900,000
	- Electricity (month)	3	50,000	150,000
	Total Expenses			7,060,000
2	Earnings			
	- Chicken sales (birds)	180	47,500	8,550,000
3	Total Income			1,490,000
4	R/C Value			1.21

The research results on the core group that produced DOC in Sukabumi Regency, West Java Province, showed that the KUB chicken breeding business as DOC producer was feasible because it was profitable with an R/C value of 1.38 (Table 2) [33]. Profits obtained per period (one year) on a scale of 750 chickens was IDR 119,358,500 using fixed cost data based on depreciation. From the results of this analysis, it is known that the largest percentage of expenditure was in the form of variable costs (95.86%), while the fixed costs were only 4.14%. The largest expenditure was for feed (47.97%), then for the chicken seeds (23.90%) and hatchery services (17.95%).

Another study compares income analyses from crossbreed chickens of KUB x KUB, Sentul x KUB and Gaok x KUB up to 12 weeks of age [34]. The analyses showed that the three local crossbreeds were feasible and profitable with the R/C ratio value for KUB x KUB and Sentul x KUB crosses 1.40, while Gaok x KUB was 1.47.

The business analyses calculations of KUB chickens reported are quite diverse, but it is feasible and profitable for chicken growing and as a DOC producer. The largest expenditure is feed; therefore, feed technology innovations are always needed to make the local chicken livestock business more profitable and feasible.

The development of KUB chickens properly requires a guarantee that the nursery program with a three strata system should be maintained or carry out continuously. In addition, people who maintain this type of chicken must change the way to raise the native chickens, from an extensive to become a semi-intensive or intensive system.

Table 2 Analyses of DOC-producing KUB chicken business income in the core group in one year period in Sukabumi Regency, West Java Province [36]

No.	Parameters	Volume	Unit Price (IDR)	Total Costs (IDR)
1	Fixed Costs:			
	- Cage (unit)	1	10,000,000	10,000,000
	- Water sources for drinking and cleaning (unit)	1	500,000	500,000
	- Cage equipments (unit)	50	50,000	2,500,000
	Total Fixed Costs			**13,000,000**
2	Variable Costs:			
	- Chicken Seeds (birds)	750	100,000	75,000,000
	- Concentrates, Minerals, and Vitamins (tonnes)	27375	5,500	150,562,500
	- Vaccines (birds)	750	500	375,000
	- Electricity (month)	12	50,000	600,000
	- Hatchery Cost	56330	1,000	56,330,000
	- Labour (man month)	12	1,500,000	18,000,000
	Total Variable Costs			**300,867,500**
3	**Total Costs (Fixed and Variable)**			**313,867,500**
4	Earnings:			
	DOC (Birds)	56330	7,000	394,310,000
	Egg for Consumption (10%)	8541	1,000	8,541,000
	Culled Chicken (birds)	675	45,000	30,375,000
	Total Earnings			**433,226,000**
5	Total Income			119,358,500
6	R/C Value			1.38

Based on the results of several studies, it is known that the productivity of native chickens could increase if they are maintained intensively. It reported that the production of eggs from native chicken that was reared extensively was 47 eggs/bird/year; it could increase to 59 eggs/bird/year if kept semi-extensively and to 146 eggs/bird/year if maintained intensively. The increase in egg production was mainly due to the frequency of laying eggs from only three times/year in extensive rearing to 6 times/year in semi-intensive rearing and seven times/year in intensive rearing [7]. This is mainly because the semi-intensive and intensive care systems provide adequate feed both in terms of quality and quantity and a more secure level of health due to vaccination and regular administration of medicines.

The thing that might be an obstacle in the development of KUB chicken is the taste and quality of KUB chicken meat. KUB chicken meat has a higher protein and fat content than other chicken meat. However, physically (tenderness), KUB chicken meat cannot yet resemble native chicken meat [35]. KUB chicken meat is pale in color, with fine to slightly coarse fibrous textures, with a moderate level of tenderness and a savory taste.

KUB chicken study to produce chicken meat that resembles native chicken has not been realized in terms of meat tenderness. This is because KUB chickens are kept intensively by placing them in a battery cage, thus limiting the activity of the chickens. Differences in texture and flavor of meat could be manipulated through maintenance management [36].

There are seven alternative policies for the sustainability of KUB chicken development in the #BEKERJA Program. 1) The immediate building of institutions at the production level (farmer groups) and marketing. 2) Building and encouraging cooperation with other institutions in preparing the production input (DOC, feed, vitamins, and medicines). 3) Market facilitation by considering the distribution of margins among business actors (Cooperation-Village Bank-Farmers). 4) Building a mini-feed factory as a means of supporting production. 5) Improving the quality of chicken resources through guidance and assistance. 6) The livestock sector cooperates with other related sectors. 7) Securing soft loans from banks or financial institutions and optimizing market segment institutions' existing input and output [19].

Research on the #BEKERJA Program conducted in Garut Regency, West Java Province, reported that to achieve conditions for sustainable KUB chicken production and development, it requires the involvement of entrepreneurs to improve the availability and supply of KUB chicken seeds and feed at affordable prices so that business can be profitable [37]. This requires cooperation or business partnerships between breeders and entrepreneurs, farmers, and supplier institutions. In the case of the Garut Regency, it agreed that Farmers' groups could provide a limited number of DOCs for their group members.

Furthermore, with regression analyses to see the continuity of the KUB chicken business, it was found that factors that have a significant influence were the motivation of farmers, suppliers of business inputs, marketing intermediaries, consumer desires, the guidance of officers, selling prices, location of business places and quality of KUB chickens. Farmer motivation is one of the main factors in the sustainability of the development of KUB chickens.

The higher the motivation of the breeders, the greater the level of sustainability for cultivating KUB chickens.

Another study conducted for the sustainability of the #BEKERJA Program in Central Lombok Regency, West Nusatenggara Province, which carried out with SWOT analyses, found that strategies related to technical and socio-institutional activities [38]. The #BEKERJA Program had impacts in increasing KUB chicken cultivation, increasing nutrition through consumption of eggs and meat, and the presence of KUB chicken business opportunities to increase family income.

Finally, the South Kalimantan Province has good and profitable opportunities and prospects in developing KUB chickens either with a semi-intensive or intensive maintenance pattern [26]. Strategies and development efforts that can be carried out to increase the population, productivity, and business efficiency of KUB chickens must be supported by technology in the form of improved feed quality and quantity, prevention and control of disease through improved environmental sanitation and cages, routine vaccination and use of livestock herbal medicine to increase appetite.

Furthermore, for the sustainable development of KUB chickens, the recommended model was to establish a large and strong KUB chicken business institution. These include a) a production unit that produces hatching eggs so that the availability of KUB chicken seeds is guaranteed and routine; b) The feed unit is in charge of supplying feed ingredients, using a feed bank, collective procurement of feed ingredients. c) The marketing unit and establishing a network with various parties.

7. Conclusion

KUB chicken is formed because local chicken meat is very popular among Indonesians, as it is more suitable and delicious for various types of Indonesian dishes. The development of culinary using local chicken, which has become fast growing in recent years in Indonesia, has resulted in efforts in breeding the local type of chicken with a high level of productivity. The breeding program and distribution of KUB chicken has covered up to 17 Provinces in Indonesia.

The business analytic calculations of KUB chickens reported are quite diverse, but it is feasible and profitable both for chicken growing and as a DOC producer. The largest expenditure is feed; therefore, feed technology innovations are always needed to make the local chicken livestock business more profitable and feasible. The recommended model was to establish a large and strong KUB chicken business institution, namely a) production unit to produce hatching eggs, b) feed unit to supply feed ingredients, c) marketing unit.

Furthermore, d) establishing a network with various parties. The thing that might be an obstacle in the development of KUB chicken is the taste and quality of KUB chicken meat. KUB chicken meat cannot yet resemble native chicken meat, as it has a pale color, fine to slightly coarse fibrous textures, with a moderate level of tenderness and a savory taste.

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