



Management of Broiler Chicken Maintenance with a Semi-Closed Cage System in the Cages of Partner Breeders PT. Pitik Digital Indonesia

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Abstract. The requirement for animal protein—including meat, milk, and eggs—continues to rise due to Indonesia's expanding population. Animal protein's nutritional significance is becoming more widely recognized. Under these circumstances, meat emerges as one of the most popular forms of animal protein due to its excellent nutritional value and delicious flavor. With a focus on managing the rearing of broiler chickens, Field Work Lectures (MPAs) are held to apply theory to field practice. Primary and secondary data collecting, as well as the application of maintenance management standards, are the MPA operations that are conducted in the cages of PT. Pitik Digital Indonesia's partner breeders in West Java. Through upgrades to infrastructure and facilities and the utilization of maintenance-simplifying apps, the productivity project outcomes of the Farming program demonstrate greater efficiency in reaching the target chicken weight. Various phases are involved in managing broiler rearing, from setting up the cage, feeding and maintaining it, to harvesting. Facing north to south, the cage is semi-closed in design. The cattle that are raised are Cobb strain broiler chickens. Cage cleaning and biosecurity improvements are necessary to lower the risk of disease and chicken death, even though the performance index indicates good performance.

Keywords: Animal, Broiler, Breeder, Chicken

INTRODUCTION

The need for animal protein, such as meat, milk, and eggs, is rising, reaching 13.39% between 2010 and 2022 due to the country's growing population (Central Statistics Agency, 2022). The value of animal protein in achieving a balanced diet is becoming more widely known. Meat is one highly nutritionally valuable form of animal protein. Owing to its delicious flavor and excellent nutritional value, meat is the most popular animal protein source that people eat.

The broiler chicken is one breed of chicken that is particularly good at producing meat. It just takes 4-5 weeks to harvest this type of chicken because of its quick growth. From Rasyaf's

(2008) perspective, numerous new and seasonal breeders have emerged in different parts of Indonesia due to a comparatively short and profitable maintenance time. People enjoy the soft, flavorful meat that is produced. This breed's products play a significant role as an affordable source of animal protein. For maximum productivity, broiler chicks require proper upkeep.

In Indonesia, broiler chicken production and consumption have remained the same. While broiler chicken production has reached 3.42 million tons, consumption of chicken meat has reached 4.53 million tons (Central Statistics Agency, 2021). Broiler chicken meat is currently the most popular type of chicken meat consumed. Its ineffectiveness in broiler farming is primarily due to inadequate maintenance management. The percentage of broiler farming companies that have used technology and established proper maintenance management could be much higher. This, among other things, hampered the population growth of broiler chickens. In actuality, Indonesia offers favorable climatic conditions for the growth of broiler chickens, particularly when it comes to outdoor temperatures that are lower than the birds' body temperatures. Accordingly, Indonesia still has a plethora of options for maintaining broiler chickens.

Nuryati(2019) emphasizes that the performance of broiler chickens, evaluated through parameters like mortality, feed consumption, ultimate body weight, feed conversion ratio (FCR), and performance index (IP), is a key indicator of farm production success. The quality of feed, seeds, and staff supervision are the primary determinants of ideal broiler chicken performance, with the housing system playing a significant role in management. Therefore, the performance of the broiler farming industry is heavily reliant on rigorous maintenance, particularly the cage system.

LITERATURE

The chicken breed, known as a broiler, is a hybrid. A variety of roosters native to South Asia and India is the Indian fowl jungle chicken or pure strain. In order to create genetically distinct varieties of chickens, broiler chickens were initially found in the wild in the forest and crossed with other sorts of chickens. High-quality broiler chicken species were obtained through studies undertaken by researchers from farms across several countries. Breeds with the highest meat weight and fastest growth rate are considered anticipated. After acquiring the highest-quality genetic crossings, the offspring are assisted by several additional elements, including premium feed and housing designed to increase hens' endurance. According to Sattar (2014), the cage's cleanliness and health are crucial in stopping illness.

A Day Old Chick (DOC) or good quality day-old chicks have the following attributes, according to Jayanata and Harianto (2011): a clean, shiny, hairy body, fat and round shape, sharp and bright eyes, a clean and dirt-free cloaca, no scars or defects, and a minimum body weight of 37 grams or an average of 40 grams. They are disease-free and have an active, agile, and fat disposition.

Broiler chickens have many benefits, including soft flesh texture, big stature, broad chest, dense and confined design, resistance to excessive feed, quick weight gain, and feed conversion. However, they are also hard to adjust to, susceptible to certain illness infections, and necessitate rigorous maintenance techniques (Rahmanto, 2012).

Strains are a breeder's hallmark or the product of breeding with a particular goal. Goals with a high economic value (high producers) or commercial orientation are typical. Inbreeding mating combined with intense selection for specific goals and lasting at least five consecutive generations is what causes strains, according to Wahju and Sugandi (1979). A group of chickens with specific characteristics developed, such as high egg and meat production, illness resistance, and ability to live in a temperate climate, is called a strain (Dickinson & Lewis, 1963).

Beyond nutrition and breeding, management is one of the most crucial aspects of raising broiler chickens. Cage preparation is the process of sanitizing and implementing biosecurity measures to prepare a cage for upkeep. According to Dahlan and Hudi (2011), the goal of sanitation and biosecurity is to prevent the spread of pathogenic microorganisms known to be disease carriers.

Hatching, or the arrival of young to be raised. Upon the arrival of the DOC, the initial task is to examine and note the general state, considering both the amount and quality. The following traits of a high-quality DOC are present: it weighs at least 37 grams, has bright, full fur, big, wet feet that resemble fat, and appears active (Fadhilah, 2004).

Since DOC's introduction, research has been done to determine its quantity and quality. This ensures the quality and excellence of the DOC housed in the cage, meaning it is disease-free, healthy, and not physically impaired. The best way to begin maintaining commercial broiler chickens is by maintaining high-quality breeds (Dwicipto, 2010).

A chick's first stage of growth and development is known as the beginning phase. This phase significantly impacts the chicken's final performance because it marks the rapid development of immune system-related organs and digestion. Both organ and cell development occur during this period. Body weight will increase as a result of cell proliferation. As to

Hardantini (2012), a chick's output can rise in the subsequent period and decrease in the beginning phase if it fails.

The curtain is wholly lowered as the finisher phase approaches to allow for better air circulation within the cage. Air conditions during the finishing phase might cause high mortality in hens since they are susceptible to them. Disinfectants are used to clean all livestock production equipment and means before entering the post-harvest. Because broiler life cycles are so short, timing and accuracy are crucial for cage management, significantly impacting chicken growth (Dahlan & Hudi, 2011). Livestock management must, therefore, be balanced for optimal results

METHOD

The data collected during MPA consists of primary data and secondary data. Primary data is data collection through active participation in conducting daily activities on site, interviews and discussions with field supervisors, staff, and employees. Secondary data is data that has been processed can be obtained from data that already exists in companies such as archives, journals related to activities, and looking for appropriate references.

DISCUSSION

Maintenance Management

Cage preparation is the initial stage that must be considered in the maintenance of broiler chickens. The purpose of this cage preparation is to ensure that the coop is clean, safe and free from things that can cause chickens to get diseases both from previous periods of chicken keeping and contamination from outside the cage. The preparation carried out at Juhadi farm is:

- **Feed Place**

Feed places should be available in the maintenance of broiler chickens because as feed containers to increase the weight of broiler chickens. In addition, the feed site must be balanced with the population of broiler chickens to reduce competition or fight for feed and also the level of stress in broiler chickens. Juhadi farm has a total of 420 super hanging feeders measuring 5kg as a place to feed 10,000 broiler chickens. This is in accordance with the comparative ratio of use proposed by Tamaluddin (2014) in the following table:

Table 7 Feed Place Needs for 1,000 Broiler Chickens

Equipment	Age of chickens (Days)					
	1-7	8-14	15-21	22-28	29-35	>36
	Sum (Unit)					
Feeder Chick Tray	12-14	4-6				
Baby Chick Feeder	10-12	8-10				
Hanging feeder 5kg		10-12	12-20	25-30	30-35	40
Hanging feeder 7kg			10-15	20-25	20-25	25

Source: Ferry Tamalludin, 2016

Based on the chart above, one feed bin can hold at least 25 heads out of 1,000. This allows 10,500 heads to be housed in the Juhadi farm cage, which has 420 pieces of feed in total. This complies with PT Pitik Digital Indonesia's requirements.

- **Where to Sip Alcohol**

In broiler chicken keeping, drinking areas are accessible, just like feed bins. Maintaining a balance between the number of drinking outlets and the overall population can decrease dehydration and stress levels. At Juhadi Farm, there are 1032 nipples for every 10,000 broiler chickens. This aligns with the ratio established by PT Pitik Digital Indonesia, which states that eight to twelve broiler birds can fit under one nipple.

- **Luminance**

Lighting is a crucial aspect of broiler chicken farming. It not only helps chickens find their food and water sources but also stimulates their activity and learning. On the Juhadi farm, we maintain a light level in the cage between 23 and 24 lux. This is in line with the findings of Fairchild and Lacy (2006), who observed that light intensity below 10 lux, which leads to increased activity, can result in a drop in growth pace. To encourage chicken activity and facilitate their learning, we use a slightly higher light intensity (25 lux) during the initial days of rearing.

- **Warming**

Since hens during DOC are cold-blooded creatures, the heater is set up before chick-in because the birds require adequate warmth to survive. Because DOC cannot yet regulate body temperature or because the mechanism for regulating body temperature still depends on the ambient temperature (homothermic), Fadillah (2013) states that the ideal temperature is approximately 32°C and remains constant throughout the day with humidity levels between 50% and 60%.

A modified rose with an LPG gas heat source powers the heater at Juhadi Farm. Six modified roses were employed at Juhadi Farm because, according to PT. Pitik Digital Indonesia, one modified rose could hold up to 1,500 hens. Heaters are used for a maximum of 14 days.

- **Air Ventilation**

Because it regulates the cage's air cycle, ventilation is the most crucial component of its construction. The addition of a fan that draws in fresh air from the other side of the cage while sucking in dirty air from the side can help with assisted or additional ventilation (David, 2013). Another option is adding a fan that blows fresh air into the cage, pushing out any existing debris.

Tunnel ventilation is the method used in Juhadi farm cage ventilation. Air is drawn to the back (outlet) by an exhaust fan (blower), and air from outside the cage enters through the front (inlet) of the system and travels downstream. This ventilation system is fitted with a parent-filtered cooling pad to chill the air and filter out any dust or debris before it enters the cage.

Cage ventilation is crucial to keeping air circulation going and keeping the temperature within the cage colder and more humid, according to Fadillah (2004). Due to air circulation above the chicken, the temperature of the air will drop by at least 5.6 degrees Celsius.

- **Husk**

Husk is prepared because it gives the chicken a place to live and a base, and it can also help preserve the husk's quality, improving the chicken's performance. Juhadi Farm uses rice husk as a husk mat. For Juhadi's cage, up to 200–300 bags of husks with a 5 cm thickness are used on each floor during the brooding season. The usage of husks that are 5 cm thick during brooding complies with the guidelines established by PT. Pitik Digital Indonesia. Replanting husks every two days lowers the ammonia levels in the husks and preserves their quality in Juhadi farm cages.

Biosecurity and Hygiene

All actions conducted as a first line of defense to limit disease outbreaks and stop disease transmission are called biosecurity. In order to maintain the health of farm animals, sanitation is a task that involves keeping the surroundings and the cage clean. One aspect of implementing biosecurity and sanitation is cleaning cages. Cleaning and sterilizing a cage against all bacterial and viral infections is one of the advantages of cage washing (Ardana, 2011). The following are the phases that Juhadi farm cages use to implement biosecurity and sanitation:

- **Cleaning of litter**

Because fleas lay their eggs on the litter bed to reproduce, the first step in cleaning litter marks is using insecticides to prevent ticks from reproducing. This ensures the litter is taken out of the cage and moved out of the cage setting right away.

- **Cleaning cages**

After removing the husks, the cage is cleaned with clean water, detergent is applied, and its surfaces are sprayed with intense water pressure to eliminate any remaining filth.

- **Cleaning of feed receptacles**

All feed bins are removed once harvesting is complete, and they are then cleaned with soap and water, dipped in disinfection liquid, and dried before being stored in a clean location.

- **Cleansing of water installations**

The Juhadi farm enclosure's water installations are cleaned by flushing water lines and containers to remove any connected moss or crust.

Consuming food

Broiler chicken rearing practices involve feeding ad libitum or continually, and there shouldn't be any empty feed bins to maximize the weight gain of broiler chickens and make it simpler for them to obtain food.

Feed is provided using an early feeding system (Early Feeding) at Juhadi Farm as chicks come in (chick-in). This mechanism fills the feed bin to the brim, manually fills the cup nipple with water, and distributes the feed uniformly over a newspaper base to feed as early as possible. This early feeding program aims to allow DOC to feed wherever it is, meet crop-filled targets, stimulate temperature, and prevent DOC from consuming the nearby husks. Better digestion can also be achieved by increasing intestinal fiber growth through the supply of early feeding. The moment the used newspaper is torn and it is time to lift the newspaper pad—which is lifted for at least one 24-hour period—activities will cease.

Rations are given to animals based on their age, ration preferences, and ration types, according to Alamsyah (2005). In order to aid in the digestion of rations in the DOC digestive tract, mash is the kind of diet for chicks aged one to ten days. PT. Charoen Pokphand Indonesia provides the commercial feed used for brooding and straw period, while PT. Kerta Mulya Saripakan provides the finishing feed.

Weight Gain

Chicken weight gain is weighed every day in the afternoon with the aim of knowing the amount of weight gain from the previous day, but not all chickens have to be weighed, just use 20 heads as samples with random collection in various corner and middle areas of the cage. After that, the sample weights are averaged by the sum of the weights divided by the number of samples. However, if grading is done, the average calculation must be separated according to the number of chickens graded.

Thinning

Thinning is done with the aim of reducing the level of density and maximizing the capacity of the cage. This thinning was carried out at the age of 23 days, as many as 2310 broiler chickens out of 10,000 heads were harvested.

Table 1 Juhadi Farm Thinning Data

Data Attention		
Number (Tail)	Weight (kg)	Average (KG)
300	396	1,32 kg
300	388,5	1,29 kg
300	395,5	1,31 kg
300	380,5	1,26 kg
300	382	1,27 kg
300	386	1,28 kg
300	376,5	1,25 kg
210	261,5	1,24 kg
Number (Tail)	2,310	
Amount (Weight)	2.996,5 Kg	
Average		1,297 Kg

Source: Juhadi Farm, 2022

Harvesting

The total harvest from Juhadi farm's cage was 9,612 heads with a total weight of 15,193 Kg. the average weight of all chickens harvested was 1,581 Kg. the number and size of chickens according to the purchase request letter.



Figure 1. Harvesting Process

CONCLUSION

Based on the results of the fieldwork lecture, it can be concluded that the management of broiler chicken rearing at Juhadi Farm is very good with the performance index value obtained during one period reaching 368. In addition, the average body weight reached 1,581 Kg, FCR 1,494, depletion 3.88%. Biosecurity and sanitation in Juhadi Farm's cage must be tightened again, because there are still many chickens that die or are left in the cage, besides that there is a need for supervision and discipline to enter the cage because there are some people who enter the cage without using special clothes that can be a source of disease in the chicken.

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