

RELATION OF PRODUCTION QUALITY LIVESTOCK AND GOOD FARMING PRACTICE IN SEMI-CLOSED HOUSE CAGES BROILER PLASMA FARMS AT PT. MUSTIKA JAYA LESTARI MADIUN

BY

Eko Prasetyo Bayu Susanto*¹, Ita Wahyu Nursita² and Eko Widodo³

¹Student of Postgraduated, Faculty of Animal Science, Brawijaya University, Malang, East Java, Indonesia

²Lecturer in Animal Production, Faculty of Animal Science, Brawijaya University, Malang, East Java Indonesia

³Lecturer in Animal Nutrition and Feed, Faculty of Animal Science, Brawijaya University, Malang, East Java Indonesia



Article History

Received: 10/11/2023

Accepted: 18/11/2023

Published: 21/11/2023

Vol – 2 Issue – 11

PP: - 75-82

Abstract

The purpose of this study is to investigate how semi-closed house housing systems are affected by the relationship between livestock production performance and Good Farming Practice (GFP) ideals. Thirteen semi-closed house cage broiler farms and seventeen contemporary closed house cage broiler farms at PT Mustika Jaya Lestari Madiun make up the thirty plasma farmer broiler farms used as study material. Farmers in sample groups that operate broiler farming operations and use contemporary closed-house and semi-closed-house cage types in collaboration with PT. Mustika Jaya Lestari Madiun selected the sampling strategy for plasma farmers using purposive sampling. This allows for the provision of an overview of the relationship between livestock production performance and the importance of Good Farming Practice (GFP) in the semi-closed house housing system. The study's findings demonstrated that PT Mustika Jaya Lestari Madiun's semi-closed house cage plasma farming operation attained a GFP value of 74.49%. Based on the semi-closed house cage plasma farm business at PT Mustika Jaya Lestari Madiun, the production processes and facilities have weighted values of 92.75% and 85%, respectively. With weighted values of 50%, 68.75%, and 67.5%, respectively, the broiler production performance and supervision in the semi-closed house cage plasma farming business at PT Mustika Jaya Lestari Madiun are evaluated in relation to environmental conservation. There is a substantial and significant association between production performance and GFP scoring in semi-closed house cage plasma farms. Variance analysis using linear regression equations with very real differing effect outcomes ($P < 0.01$) provides proof for this.

Keywords: Broiler, Good Farming Practice, Production Performance, Semi Closed House

INTRODUCTION

Livestock is one part of the agricultural sector that needs to be developed and utilized optimally for the prosperity of the people. One of the livestock commodities that has the potential to be developed is broiler chickens. This is because broiler chickens produce meat as a source of protein, which is very important for humans. In broiler agribusiness, the partnership pattern has proven to be a way out of the tempest of the economic crisis that has not subsided since mid-1997. In 1997, the structure of poultry agribusiness actors was 30% partnership and 70% independent business; in 1999, this structure changed to 80% partnership and 20% independent business (Suasta et al. 2019).

The latest broiler-rearing system that is widely applied in

Indonesia is the closed cage system (*closed house*), consisting of a modern *closed house* and a *semi-closed house*. The modern *closed house* is one of the technological innovation efforts to deal with quite extreme weather changes, so it is hoped that it can minimize the negative effects of environmental conditions or climate change outside the cage. Hidayat et al. (2020) explained that the purpose of using a caged modern *closed house* is to create a controlled microclimate in the cage, increase productivity, land, and labor efficiency, and create a livestock business that is environmentally friendly, but the development of a modern *closed house* requires very expensive costs. Whereas semi-closed houses, according to Bachelor et al. (2018), adopt the principles of modern *closed houses*: the shape is like an open cage, the walls are not made permanent using curtains or

tarpaulin, the top of the cage is made into a ceiling, and so on, an exhaust fan functions to attract or absorb oxygen and carbon dioxide, and the cost of making cages tends to be cheaper than modern closed houses.

Analysis of the influence of the relationship between livestock production performance and value *Good Farming Practice (GFP)* in the housing system is semi-closed if it can provide information to farmers about the success of the business they have established and as evaluation material in making decisions in the future. For breeders, evaluation is very helpful in finding existing problems and then fixing them so that the livestock business can run more optimally than before.

MATERIALS AND METHODS

The material used is plasma farming of broiler chicken cages, a modern closed house, and a semi-closed house at PT Mustika Jaya Lestari Madiun. The determination of sample size in research was carried out using the Slovin formula. The number of pen plasma farms with modern closed houses is 17, and pen plasma farms with semi-closed houses are 13 breeders. The research was carried out on chicken farm broilers in partnership with PT. Mustika Jaya Lestari Madiun. The research and data collection were carried out from May 8 to July 7, 2023. The research site was chosen at random, taking into account the opinions of PT. Mustika Jaya Lestari Madiun, a poultry development company that has partnered with 96 plasma breeders of broiler chicken farms located in the regions of Madiun, Magetan, Ngawi, and Ponorogo. This company has never been used for research before. A case study was the research methodology employed. The present study used surveys, interviews, and documentation collection as data collection methodologies.

RESEARCH VARIABLES

The variables used in the research are facilities aspects, production process aspects, environmental conservation aspects, supervision aspects, and production performance aspects.

DATA ANALYSIS

Data were gathered in accordance with field facts, processed, and analysis using regression and descriptive analysis to produce an overview of the relationship between livestock production performance and the importance of *Good Farming Practice (GFP)* in the semi-closed housing system.

RESULTS AND DISCUSSION

The results of the research show that the GFP value in the livestock plasma farming business semi-closed house at PT Mustika Jaya Lestari Madiun as a whole is 74.49%. According to Hasan (2018), if the GFP value of a farm is in the range of 60–75%, then the GFP performance on that farm is poor. The evaluation value of GFP in the pen plasma farming semi-closed house at PT Mustika Jaya Lestari Madiun can be seen in Table 1.

Table 1. Evaluation Value *Good Farming Practice (GFP)*

GFP Aspect	Weighted Value (%)	Aspect Weight (%)	GFP Performance Value (%)
Means	85	25	21,25
Production process	92,75	20	18,55
Environmental Conservation	50	15	7,50
Supervision	68,75	15	10,32
Production Performance	67,5	25	16,87
Total			74,49

The research results, with a GFP value of 74.49%, indicate that the plasma farming business is a stable, semi-closed house. At PT Mustika Jaya Lestari Madiun, there need to be improvements related to achieving the GFP value. Judging from the aspects of the facilities and production process of the plasma cage farming business, semi-closed house PT Mustika Jaya Lestari Madiun has implemented GFP well, with weighted values of 85% and 92.75%, respectively. Viewed from the aspect of environmental preservation, supervision, and production performance of broiler chickens in plasma cage farming businesses in semi-closed houses At PT Mustika Jaya Lestari Madiun, the implementation of GFP is still considered inadequate, with the respective weighted values being 50%, 68.75%, and 67.5%. So, these three aspects still need to be improved so that the implementation of GFP is better and production results increase.

Evaluation of Facilities Aspects

The results of this study show that the value-weighted for the cage facilities aspect of semi-closed houses in the plasma breeder broiler farming business at PT. Mustika Jaya Lestari is 85%. This large value shows that this farm has implemented the provisions regarding the facilities aspect quite well according to GFP guidelines. This is in accordance with the opinion of Tanjungari et al. (2022), who state that livestock farms regulate the layout of buildings according to their function, and the distance between buildings on the farm is regulated so that they are not close to each other, which aims to reduce the risk of disease transfer between farmers and livestock. Access in and out of the farm is also designed so that unauthorized people do not carelessly enter the farm area. Aspects of facilities in the cage semi-closed house plasma farming at PT. Mustika Jaya Lestari still have shortcomings in terms of topography, pollution prevention, livestock tools, and machinery that have not been used optimally.

a. Location

The plasma breeder broiler rearing business at PT. Mustika Jaya Lestari Madiun is spread across Madiun, Magetan,

Ngawi, and Ponorogo districts. The location of cage-type plasma farming cages in semi-closed *houses* is in accordance with GFP provisions, namely including agricultural areas and cultivation areas in addition to residential and industrial areas. This is in accordance with Jannah et al. (2018), which explain that the distance between livestock and the nearest settlement is > 200 m and has fulfilled the provisions in the Minister of Agriculture (2014) regarding the distance between livestock and non-farm buildings, namely a minimum of 25 m.

The weighted value of the location aspect is an average of 2.38% because it is viewed from the location, which includes agricultural areas and cultivation areas as well as residential and industrial areas. Apart from that, environmental pollution resulting from livestock waste does not trigger anxiety for local residents. The importance of the right location will influence the sustainability of the broiler business in the future. Tanjungsari et al. (2022) stated that the requirements for a good chicken farming business location can be seen in the structure, housing management, and good sanitation, so that appropriate conditions are created that do not cause pollution to the surrounding environment for the sustainability of the broiler chicken business.

b. Land

The land used by pen-type plasma farms is semi-closed for broiler rearing and is equipped with a certificate of ownership (SHM), in accordance with the recommendations in the guidelines GFP implemented in the Ministry of Agriculture. The land is used for building stables, food and equipment storage, and wellness/workers' barracks.

c. Preparation of Water and Illuminating Tools

Water is one of the main needs for livestock and must always be available throughout the year. The water used must meet healthy water quality standards; that is, it can be drunk by both humans and livestock and is available throughout the year. This is in accordance with Prayoga et al. (2022), who say that good water quality is water that is free from various harmful microorganisms. The water used for production activities comes from a well, which is then stored in a water reservoir and channel into plastic drums located around the cage to facilitate the process of providing drinking water. Lighting utilizes lamps and electricity with sufficient use according to needs.

d. Building

The farm building in the stable semi-closed *house* includes cultivation cages, feed and equipment warehouses, and *workers'* barracks. According to GFP regulations, livestock building facilities are quite good, with isolation cages for sick livestock and waste processing. The assessment aspect of livestock buildings is worth 3 because in the husk warehouse, there is still the potential for damage due to damp husks, and the equipment warehouse is not neatly arranged. This creates the potential for the spread of diseases caused by veterinary animals because a messy warehouse has the potential to become a rat's nest. Purwaningsih (2016) states that livestock buildings must be designed to facilitate the comfort, health, and productivity of livestock. Good air circulation, the

availability of good-quality feed and water, lighting, and livestock comfort must be considered to improve livestock performance. The design of each building must take into account the environment and topography so that the dirt and waste produced do not pollute the environment. The construction of cage-type plasma breeder cages in semi-closed *houses* has met the criteria for a good cage, according to the Minister of Agriculture (2014), namely that the construction must be strong, the distance between the slats, boards, and bamboo is not mired and is comfortable for livestock, and the drainage and waste disposal channels are good and meet sanitation requirements. Apart from that, the cage is made from materials that meet the requirements of a foreclosed *house* with economical materials and are safe to use for a long period of time.

e. Animal Livestock Tools and Machinery

Farming tools and machines owned in cage-type plasma farms and *semi-closed houses* have met the criteria in the GFP, such as the availability of feed and drinking water, sanitation equipment, disease control, and scales. For standard farm machinery, cages are *semi-closed houses* consisting of a machine blower, a cage washing machine, a *thermometer*, and a generator to turn on electricity in the event of a power outage.

The blower machine is used every day to maintain air circulation, temperature, and humidity in the livestock pen so that the livestock remain comfortable until harvest time arrives. The use of livestock machines is relatively easy and safe to operate, but it requires special assistance from people who are experts in operating them to regulate the resulting wind speed. *blower* suitable for the condition of the cage. Using equipment in the maintenance process is quite difficult because some of the cage crew do not understand how to operate it, especially if the power goes out. The generator must be turned on and the settings changed to generator. Tools used to treat sick livestock are not separated from tools made for normal livestock or livestock that are not infected with disease. These two aspects are also important to support the production aspect if the equipment is not controlled by the stable staff, such as changing the electricity supply to the generator. If the electricity is on, it can cause major deaths if the generator is not turned on immediately, and the equipment used for sick livestock needs to be separated so that it does not spread to other animals. healthy livestock.

f. DOC

DOC broilers for fattening on this farm come from areas around East Java, such as Jombang Regency, Lamongan Regency, Malang City, and Pasuruan Regency. The DOC obtained comes from farms with business permits because it is produced by a certain company. DOC entry is carried out every month after harvest, according to the readiness of the cage to be used and the availability of DOC owned by the supplier.

The selection of DOC meets the quality and type of livestock requirements in accordance with the Minister of Agriculture Regulation (2014). Rostagno (2020) stated that the selection

of DOC must pay attention to the following aspects: being free from disease, especially pullorum disease, fungus, and omphalitis; coming from good parents; *Day Old Chick* (DOC) looks active, lively, and has bright eyes; DOC has high maternal immunity; DOC's feet are large and wet; he has bright fur that is full and not dull; he has clean cloaca with no dirt attached; DOC's body condition is normal; he has a body weight according to the strain standard, usually above 37 grams.

g. Feed Adequacy

The feed given to livestock is fodder *feed*. Feeding is in accordance with the chicken nutritional requirements table, which is a reference in maintenance. Each period or age of feeding chickens has a different nutritional content. In the pre-starter phase, aged 0–8 days, they are given shaped feed *fine crumble* with type BR0 610 produced by PT Charoen Pokphand; phase starters aged 9–21 days are given shaped feed crumble with type BR 1 611 PT Charoen Pokphand production; and phase finisher age 22-harvest is given shaped feed *pellet* with type BR 2 B12 MTK produced by PT Charoen Pokphand. Nutritional requirements are appropriate GFP implemented by the company. Prayoga et al. (2022) state that feeding chickens must be regular, with feeding times in the morning, afternoon, and evening. Feeding also pays attention to the maintenance phase. In the starter phase, aged 1–21 days, they are given shaped feed crumble, and in the finisher phase, they are given shaped feed pellet. Likewise, the nutritional content in the feed must be considered so that the feed consumed provides good performance for chicken meat production.

h. Veterinary Medicine

Veterinary medicines are preparations that can be used to treat animals, relieve symptoms, or modify chemical processes in the body, which include biological preparations, pharmaceuticals, premixes, and natural medicinal preparations (law number 18 of 2009). The types of veterinary medicines used in plasma farming at PT. Mustika Jaya Lestari Madiun consist of Biogreen, Baycox, Biocid, Probiotic, Perfexsol, Chantavit, Chlorine, Destin, Diclacoxy, Doxy 500 WS, Interflox, Kumavit, Liptobac, and Toltradex. This veterinary medicine has been registered and has a registration number from the Ministry of Agriculture. The use of these medicines is also in accordance with the conditions and dosage of use stated on the product packaging label.

i. Labor

Workers on cage-type plasma farms have semi-closed *houses* at PT Mustika Jaya Lestari Madiun, the average number is 2–3 people. Workers are healthy and able to carry out work well, in accordance with GFP provisions. Training related to technical production is not provided specifically but is obtained through work experience and guidance from the owner and field officers. Law number 13 of 2003 concerning employment contains regulations regarding all matters relating to labor, in particular, the provision of wages and salaries; namely, the minimum wages given are adjusted based on the sector in the provincial, district, or city area. The salary and wages for workers on this farm are not greater than

those of the regional UMK but are sufficient, according to the agreement between the owner and employees.

Evaluation of Production Process Aspects

a. Breeding Selection (DOC)

In general, the selection of DOC in the cage plasma farming semi-closed *house* at PT Mustika Jaya Lestari Madiun is considered good because it pays attention to the aspects of good DOC requirements to be used as rearing seeds, namely being free from all physical defects such as deformed legs, beaks, lameness, and abnormal shapes, bright feathers, and lively chickens that don't limp. Specifically, the DOC used in the broiler business is one-day-old chicks with a body weight of >37 g and good DOC quality. The DOC are then reared for a period of 30–38 days with a live weight of between 1.5 and 2.4 kg per chicken. Strains used in the pen plasma farming semi-closed *house* at PT Mustika Jaya Lestari Madiun, namely strains *Cobb and Lohman*, also need to be considered. Apart from the DOC grade, the health of the DOC also needs to be considered.

A healthy DOC can be seen from feet that are oily and not dry, bright, lively fur, and a dry anus. Pertiwi (2017) states that the DOC-grade body weight consists of silver with a DOC body weight of 29–33 grams, gold with a DOC body weight of 34–37 grams, and platinum with a DOC body weight of > 37 grams or more than 40 grams. Chickens are harvested at the age of 30–35 days with an average weight of 1.5 kg. In addition to its fast-growing trait, the chicken's performance is impacted by environmental, management, and genetic factors. This is mirrored in its voracious eating habits. Each chicken strain has different characteristics. Setyobudi (2012) stated that the chicken strain *Cobb* This species is widely kept in Indonesia and has the characteristics of white fur, a single comb, yellow legs, and large The advantages of the Cobb strain are that it has quite good feed conversion power, fast growth, a body weight of 1.8–2 kg with an FCR of 1.650, a high level of uniformity, and a pressure point for improvement in *feed conversion ratio*.

b. Pen

The type of cage used in plasma farming at PT Mustika Jaya Lestari Madiun is a semi-closed *house*. This cage meets the criteria for a good cage, according to GFP. Strong and sturdy construction, easy to clean, good air circulation with help from an exhaust *fan*, and a sufficient number of places to eat and drink total cage density used is 14–15 birds per m², or 20–25 kg/head per m².

c. Feed

The type of feed given is complete feed. The amount given is according to the age of the chicken being kept. The standard daily feeding table used comes from the core company, namely PT Mustika Jaya Lestari Madiun. This is in accordance with the Ministry of Agriculture (2014), which states that chicken feeding must be in accordance with the feeding table for each period; if the wrong feed is given, it will be inefficient for meat production.

Nutrient content of feed given during the period pre-starter,

namely consisting of crude protein 21-22%, crude fat 5%, coarse fiber 5%, and energy mass 2900 Kcal/kg, period starter pack 20-21%, crude fat 5%, coarse fiber 5%, and energy mass 3000 Kcal/kg, and for the period finisher, crude fat 19-20%, crude fat 5%, coarse fiber 5%, and energy mass 3100 Kcal/kg. Feeding is done manually by the cage operator. Feeding is ad libitum (continuous feed availability), that is, it is given in the morning and evening.

d. Animal Health

Livestock health is a very important aspect of the success of a broiler-rearing business because livestock are able to produce optimally if they are in healthy condition (Murwani et al. 2017). In law number 18 of 2009, it is stated that animal health matters are carried out using an approach of maintenance, health improvement (promotive), disease prevention (preventive), disease cure (curative), and health restoration (rehabilitative), which is carried out in a comprehensive, integrated, and sustainable manner.

Actions or efforts to maintain livestock health have been carried out properly. Promotional measures are carried out by providing food and water with nutritional content and quantities that are acceptable for the animals' needs. Vaccine programs normally carry out efforts to manage and treat disease in animals (preventive) during the maintenance period until harvest time. The vaccine is given while the DOC is still in the hatchery (vaccine hatchery) so that when it arrives at the PT Mustika Jaya Lestari Madiun plasma breeder's pen, there is no need to vaccinate again, except when there is a disease outbreak, so a repeat booster vaccine via drinking water is required. Curative action or treatment of sick livestock is carried out conditionally according to the condition of the livestock at that time. The types of diseases commonly treated are ND, IBD, Colibacillosis, CRD, Korisa, and Coccidiosis. Treatment is carried out until the animal recovers (rehabilitation). The SOP for handling disease or high mortality at the core company, PT Mustika Jaya Lestari Madiun, is that if there are livestock that experience illness accompanied by high mortality, the cage owner (plasma farmer) must report it to the relevant field extension officer so that the cause of death can be identified for the dead chicken. After that, the core of PT Mustika Jaya Lestari Madiun provides services in the form of administering medicine or vaccines if it is felt that the chicken has not received the vaccine. Giving vitamins every day is carried out according to the existing schedule; this is part of animal health so that chickens are not easily attacked by disease.

e. Veterinary Public Health

Veterinary public health encompasses all matters related to livestock and livestock products that directly affect human health. Control over sub-aspects of veterinary public health aims to safeguard livestock health and veterinary public health. The implementation of this sub-aspect has been optimal, including the implementation of biosecurity for human and vehicle traffic, the control of wild animals, and the vaccine program.

Humans, animals, equipment, and feed can be the cause of

unwanted pests and diseases. It is necessary to limit the free entry and exit of visitors to the livestock area. Visitors who enter the livestock must go through biosecurity in the form of spraying sanitation for visitors, washing hands, and washing feet to reduce the risk of zoonotic diseases (Fatmawati et al. 2020). Some of these things have not been done in the cage plasma farming semi-closed *house* at PT Mustika Jaya Lestari Madiun. The activities that have been implemented include cleaning the area around the cage, sweeping the environment around the cage, and cleaning the husks after harvest, while sanitizing the cage or washing the cage is carried out when the cage is empty or after harvest. Treatment for sick livestock is carried out properly, depending on the type of disease and condition of the livestock. If livestock die, the carcasses will be buried in the area around the livestock land. The implementation of SOPs related to veterinary public health is not yet optimal in stable plasma farms with semi-closed *houses*. At PT Mustika Jaya Lestari Madiun, namely in the form of biosecurity, every cage or office employee who enters the cage area must go through biosecurity in the form of spraying the whole body to avoid external bacteria or viruses that can cause disease for chickens, and vehicles entering and exiting the cage area must be disinfected to decipher the spread of viruses and bacteria, which is also not optimal. For SOPs that have been implemented on stable plasma farms and *semi-closed houses* At PT Mustika Jaya Lestari Madiun, the implementation of the maintenance cage area can only be entered by cage staff, field extension officers, and farm managers. This is determined to prevent outsiders who are prone to bringing viruses or bacteria from outside, which can cause disease transmission to chickens in the cage.

f. Harvest Handling

The handling of livestock products to be harvested has been carried out quite well. Livestock that is ready to be harvested is generally taken directly by the core of PT Mustika Jaya Lestari Madiun, either sold to local baskets or to RPA (Chicken Slaughterhouse). Harvest SOPs in terms of sending chickens are transported using large trucks or pick-up trucks specifically for transporting harvests in the form of live broilers (*lovebirds*) to minimize the risk of loss and injury to livestock during the journey. The core party, namely PT Mustika Jaya Lestari Madiun, also pays attention to the delivery time of chickens to chicken slaughterhouses or local baskets so that when they arrive at the place where the chickens are to be slaughtered, they don't stay long at the slaughtering place, because this can increase the risk of weight loss of the chickens. In the implementation of harvesting broiler chickens in a plasma cage farming semi-closed *house*, This is done in the afternoon to reduce the effects of stress on chickens, which can cause livestock to die easily. Harvesting chickens using weighing baskets is 25–30 per basket, which are then weighed using manual or digital bench scales. The weighing is carried out by the plasma farmer, accompanied by officers from the core of PT Mustika Jaya Lestari Madiun, for further recording and recapture on the harvest note.

Evaluation of Environmental Conservation Aspects

a. Environmental Pollution Prevention Plan

Plans for dealing with pollution and environmental sustainability are carried out quite well in the plasma pen farms semi-closed *house* at PT Mustika Jaya Lestari Madiun. The countermeasures taken include collecting livestock waste or dung during cleaning after harvest, which is then channeled into the sewer, and the husk waste is stored for a certain period of time to be sold as organic fertilizer. Apart from that, the odor that arises from the accumulation of livestock manure does not spread beyond the livestock area or cause complaints from local residents. Tackling environmental pollution is one of the plasma breeders' efforts to maintain the existence of broiler farming businesses, especially those whose cage locations are not too far from residential areas.

b. Efforts to Prevent Environmental Pollution

Efforts to prevent environmental pollution in plasma livestock farming in a *semi-closed house* at PT Mustika Jaya Lestari Madiun have been done quite well. Prevention of the emergence of strong odors by creating a wind-blocking room so that during the process of exhausting the air from the exhaust *fan*, it doesn't spread anywhere. Apart from that, cage plasma breeders have a semi-closed *house*. We also try to spray a decomposer in the form of EM₄ solution, which is then sprayed onto the husks so that the husks remain dry and do not emit a strong odor so that the odors produced do not pollute the surrounding environment. Other efforts made are removing dirt or manure as soon as possible from the cage environment and spraying insecticide to kill flies and cage fleas. There are several things that have not been implemented in order to prevent environmental pollution. In cage plasma farming in a semi-closed *house*, on average, there is no special place to bury livestock carcasses to minimize the risk of spreading pathogenic microorganisms found in livestock carcasses. The cage plasma farming semi-closed *house* does not yet have a livestock waste processing unit that is appropriate to the capacity of the waste produced.

Evaluation of Supervision Aspects

The results of this study show that the value of the supervision aspect in the plasma cage farming business semi-closed *house* at PT Mustika Jaya Lestari Madiun is 68.75%, which shows that implementation is still considered inadequate. According to Fitriani (2015), the Animal Husbandry Service is obliged to provide guidance to the community and farmer groups in carrying out livestock development so that people understand and know how to care for their livestock properly and correctly. Supervision is only carried out by the core party, namely PT Mustika Jaya Lestari, through field extension officers to ensure that the production process in the cage runs optimally. Related to the plasma cage farming business permit semi-closed *house* At PT Mustika Jaya Lestari Madiun, on average, they have not completed a business permit from the relevant department because the business they run is still on a people's scale, not an industrial scale. Next is the recording and reporting of a stable plasma farming semi-closed *house* at

PT Mustika Jaya Lestari Madiun through the core parties, namely field extension officers as company representatives.

a. Surveillance System

The monitoring system is carried out at critical points in the production process, which is useful for monitoring possible diseases and other contamination. The Office *International des Epizooties*, or OIE (2009), explains that the risks that may arise for livestock are divided into three types of hazards, namely biological, chemical, and physical hazards. The supervision carried out in the pen plasma farming business semi-closed *house* at PT Mustika Jaya Lestari Madiun is quite good. The critical points for monitoring possible biological hazards that have been carried out are related to feed sources, feed and water, conditions in the pen, livestock population, cleanliness in the pen, and water quality. Critical point monitoring of chemical hazards has been carried out in relation to feed and water quality, livestock handling, use of chemicals (medicines), and control of chemical residues. Supervision of critical points for physical hazards, namely those related to handling livestock, injuries caused by construction, and the population of livestock in pens and livestock equipment. Supervision by authorized agencies in accordance with GFP guidelines has not been implemented properly or with minimal supervision. Monitoring by the government from the livestock service is only carried out if certain circumstances occur, such as the emergence of an epidemic or infectious disease.

b. Certification

Certification in the livestock plasma farming business semi-closed *house* at PT Mustika Jaya Lestari Madiun has not been done because the production results are intended for the local or domestic commercial market only, not for export or sale abroad.

c. Recording

Recording or recording It's been done well on this farm. Types of data recorded in the pen plasma farm semi-closed *house* at PT Mustika Jaya Lestari Madiun are in the form of livestock population data, type of feed, and livestock mortality data. Data regarding the types of drugs and vaccines used is recorded by cage employees. In addition, there is a special schedule for vaccination and drug administration. Administration of medication and multivitamins is usually carried out according to the vaccine and treatment table for sick livestock. The vaccine program has been adjusted until the livestock are ready to harvest. Data regarding the place of origin of the livestock and livestock data regarding body weight and the vaccine program that has been given are also recorded on this farm. According to Millenia et al. (2022), orderly and regular recording can help in assessing the success or failure of a livestock business. The better the business records carried out by farmers, the easier it will be to identify problems with livestock so that appropriate solutions can be found.

d. Reporting

Making regular written reports after every harvest or every 6 months to the partnership and related agencies has not been

implemented in the plasma cage farming business semi-closed *house* at PT Mustika Jaya Lestari Madiun. Regular technical and administrative reports for internal monitoring purposes have also not been carried out on this farm.

Evaluation of Production Performance Aspects

The results of research evaluating the performance aspects of broiler chicken production were carried out to determine the value produced by plasma cage farming in a semi-closed *house* at PT Mustika Jaya Lestari Madiun according to the GFP applied to the resulting production performance. The assessments used as parameters are FCR, IP, and depletion. Assessment GFP the evaluation of aspects of broiler production performance in this research resulted in a value of 67.5%. According to Sholikin (2011), production performance values in broiler farms in terms of FCR, IP, and depletion have an average value of 65–80% of the total value obtained. Aspects of broiler production performance are a very important factor in knowing the success of a period that has been undertaken. FCR, IP, and depletion are interrelated, so if one of them experiences less than optimal results, it can affect the harvest obtained. The value obtained from this aspect is 67.5%, which means that the performance aspect of broiler production that has been carried out is still not optimal when viewed from the cage capacity, standardization of equipment, and management implemented by plasma cage breeders. *semi-closed house* not in accordance with the SOP and proper directions from the core company, namely PT Mustika Jaya Lestari Madiun.

a. FCR (Feed Conversion Ratio)

FCR is an important indicator to determine the level of efficiency in feed use. The average value obtained in cage-type plasma farms in semi-closed *houses* was 1.646 in the last 3 periods, which means that to get a body weight of 1 kg of broiler chicken, 1.646 kg of feed is needed. The FCR results, when compared with the company standard of 1.613, show a higher FCR value, meaning it is less efficient in utilizing feed. Factors that influence FCR during maintenance include temperature, humidity, and AGP restrictions (*growth promoter antibiotics*) on feed. According to Wasti et al. (2020), the factors that influence FCR are genetics, ventilation, sanitation, feed quality, type of feed, use of additives, water quality, disease, treatment, lighting factors, and feeding.

b. IP (Production Index)

Production index (IP) is one of the criteria that can be used as an indicator to determine the success of raising broiler chickens. The greater the production index (IP) of broiler chickens, the better the performance of the chickens and the more efficient the use of feed. The production index (IP) can be used as a reference for production because it not only considers final body weight and feed conversion but also considers the percentage of live livestock and length of rearing. If the production index (IP) value is lower than the standard, it is highly recommended to carry out an evaluation of the implementation of maintenance management (Package

et al., 2015). The average IP achieved by Pen Plasma Farms semi-closed *house* at PT Mustika Jaya Lestari for the 3 running periods is presented at 340; this result is lower than the company's IP standard of 362. According to Widodo et al. (2021), in the broiler farming business, success can be assessed by the achievement of the production index because this indicator has entered the number of chicken deaths, body weight, *feed conversion ratio* (FCR), and harvest age. IP achieved by stable plasma farming in a semi-closed *house* at PT Mustika Jaya Lestari is in the good category.

c. Depletion

The level depletion the average for the three current periods is 5.37% higher than the standard depletion company's 4.60%. High-value depletion is affected by high death rates and culling. The high mortality rate is caused by poor cage sanitation. Disinfection of cages during maintenance is useful for minimizing disease outbreaks. Disinfecting the cage by spraying disinfectant aims to kill disease germs and reduce the ammonia levels in the litter. Apart from that, turning the litter aims to keep the litter dry so that the ammonia levels will decrease. Low ammonia levels in the cage affect the health of the chickens. Regular administration of vitamins is one of the supporting factors that causes low levels of depletion. Vitamins can increase the chicken's body's resistance to disease attacks. This is in line with the opinion of Palupi (2015), who states that factors that influence the level of depletion include the sanitation of cages and equipment, environmental cleanliness, and disease.

Relationship of Scoring Good Farming Practice with Production Performance

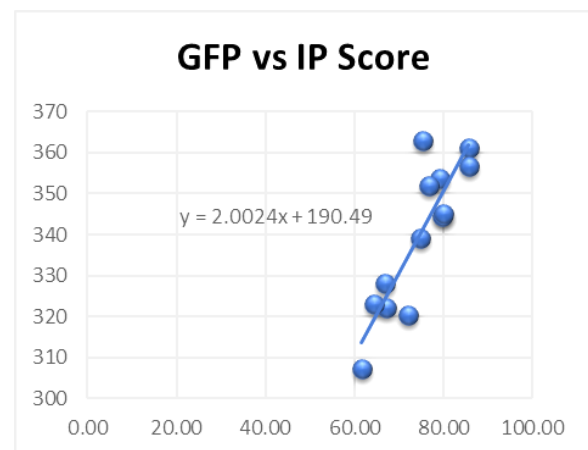


Figure 1. Graphic analysis regression of the relationship between scoring grades GFP with the Performance Index

Based on the graph above, the relationship between performance production and GFP scoring in home plasma farming at Semi Closed House has a very strong and significant correlation. This was proven by an analysis of variance with a linear regression equation with very significantly different results ($P < 0.01$). Good farming practice has a very important role because it not only aims to run the livestock cultivation business properly and correctly according to procedures but also to keep livestock healthy,

guarantee the creation of livestock products that are safe and healthy for consumption, and minimize environmental impacts. Thus, the higher the GFP value achieved, the better the production performance of the home plasma farm will be achieved.

CONCLUSION

The GFP values obtained in the cage plasma farming companies at PT Mustika Jaya Lestari Madiun were 74.49%, indicating a need for development in the livestock sector. semi-closed house Based on an analysis of the facilities and production methods used by the plasma cage farming business, weighted values of 85% and 92.75%, respectively, demonstrate that PT Mustika Jaya Lestari Madiun has successfully adapted GFP. The weighted numbers of 50%, 68.75%, and 67.5% indicate that PT Mustika Jaya Lestari Madiun's GFP implementation is still insufficient for the management, productivity, and environmental preservation of broiler chickens raised in semi-closed houses using plasma cage farming. So, these three aspects still need to be improved so that the implementation of GFP is better and production results can increase. The relationship between production performance and GFP scoring in home plasma farms (Semi-Closed House) has a very strong and significant correlation. This was proven by an analysis of variance with a linear regression equation with very significantly different results ($P < 0.01$).

REFERENCES

1. AO dan OIE. Food and Agriculture Organization and World Organisation for Animal Health. 2009. *Guide to Good Farming Practices for Animal Production Food Safety*. World Organisation For Animal Health. Italia.
2. Ministry of Agriculture. Decree of the Minister of Agriculture Number 31 of 2014 concerning Guidelines for Cultivating Good Broilers and Laying Chickens.
3. Fatmawati, M., Nugroho, W., Setianingrum, A., & Haskito, A. E. P. 2020. *Veterinary Public Health: Milk, Egg, Meat, and Environmental Health*. Brawijaya University Press.
4. Jannah, L. M., Sarjana, T. A., & Suprijatna, E. 2020. *The Effect of Spatial Changes in Ammonia Microclimate in Different Placement Zones and Cage Lengths on the Performance of Broiler Chickens in the Starter Period*. Integrated Animal Husbandry Scientific Journal, (81), 14-20.
5. Milenia, Y. R., Madyawati, S. P., Achmad, A. B., & Damayanti, R. 2022. *Evaluation of Peak Production of Lohman Brown Strain Laying Hens at CV. Lawu Farm Malang*. Journal of Applied Veterinary Science & Technology, 3(1).
6. Murwani, S., Qosimah, D., & Amri, I. A. 2017. *Bacterial Diseases in Large Animals and Poultry*. Brawijaya University Press.
7. Package, S., Hartono, B., Fanani, Z., and Nugroho, B. A. 2015. *Analysis of technical, allocative, and economic efficiency of broiler production using closed-house systems in Malang District of East Java Indonesia*. Livestock Research for Rural Development, 27(9), 1-8.
8. Palupi, R. 2015. *Management for Overcoming Heat Stress in Broiler Chickens Raised on Dry Land*. In Proceedings of the National Seminar on Suboptimal Land, Palembang. Page (pp. 1-9).
9. Prayoga, R., Puspaningrum, A. S., & Jupriyadi, J. 2022. *Prototype of Automatic Feeding and Drinking Water Equipment for Broiler Chickens*. Journal of Computer Engineering and Systems, 3(1), 1-14.
10. Purwaningsih, D. L. 2016. *Laying Chicken Breed Farming in Singkawang City*. JMS: Journal of Architectural Mosaics, 2(2).
11. Sarjana, T., Mahfudz, L., Sunarti, D., Sarengat, W., Huda, N., Rahma, N., Et Al. 2018. *Differences in Microclimatic Conditions Due to Placement Zones in Closed Houses*. Proceedings of the National Seminar on Animal Husbandry Revival III, (Pp. Vol. 3, Pp. 688-700).
12. Sholikin, H.W.S. 2011. *Management of Broiler Chicken Rearing at UD Hadi PS Farms, Nguter District, Sukoharjo Regency*. Journal of Animal Science. 3(01): 12- 56.
13. Suasta, I. M., Mahardika, I. G., & Sudiastira, I. W. 2019. *Evaluation of Broiler Chicken Production Raised Using a Closed House System*. Animal Husbandry Scientific Magazine, 22(1), 21-24.
14. Tanjungsari, A., Melinia, Y. F., Andarusworo, S., & Yuniati, Y. 2022. *Feasibility of the Lidani Farm Laying Chicken Farming Business in Wates District*. Philia Scholar Scientific Journal, 7(2), 145-153.
15. Wasti, S., Sah, N., & Mishra, B. 2020. *Impact of Heat Stress on Poultry Health and Performances, and Potential Mitigation Strategies*. Animals, 10(8), 1266.
16. Widodo, E., Pradigdo, B.A., Ardilla, Y. N. N., Ramadhan, H. M. and Purnama, N. W. 2021. *Technical, Management, and Research Design for Broiler Chickens*. Media Nusa Creative. Poor.