Broiler performance with additional Synbiotic

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Abstract. There are many methods to improve the performance and productivity of the broiler. Synbiotic is a product containing probiotics and prebiotics in one media. Synbiotic increase the digestibility of feed that contains a lot of crude fiber, eliminate the smell of ammonia in feces, increase the immune system, help increase growth and productivity, compete against pathogenic bacteria that harm and improve quality feed by increasing protein levels. The purpose of this study was to analyze the performance of broiler chickens using synbiotic. The total of 200-day old chickens divided into two treatments. The control is without symbiotic and the treatment using symbiotic into drinking water. The parameters are body weight, feed conversion, feed efficiency, and economic appearance such as benefits, break event point and income over feed cost. The results of the study showed that symbiotic increase feed consumption, body weight, feed efficiency, break event point and revenue cost, but decrease feed conversion than control. Addition symbiotic improve performance and economic appearance.

1. Introduction
Broiler business is currently not only focused in urban areas but also has reached the countryside. This is continuous with increasing population and food needs and fulfillment of nutrition, especially animal protein.

The broiler is one source of animal protein that is many consumed in Indonesia [1]. According to the National Statistics Agency of Indonesia, meat consumption per capita is based on 2016 grouping of 6,778 kg, or an increase of 5.69 percent from consumption in 2015 amounting to 6,413 kg. For consumption of chicken per capita in 2016 amounted to 5,110 kg, an increase of 6.52 percent from consumption in 2015 amounting to 4,797 kg. From this data, it can be seen that broiler consumption continues to increase.

The increase in consumption is generally influenced by the economic improvement of the community, but the increase in consumption cannot be balanced with the production of broilers in Indonesia. The breeders have now carried out various ways to survive with their business without having to go out of business. Given the price of livestock production facilities that are increasingly expensive, especially on Day Old Chicken (DOC) and feed, so that meat needs cannot be fulfilled. So this is the challenge for farmers to increase broiler production.

In the field of animal husbandry, there are many ways to improve the performance and productivity of broiler chickens. One method that is often used is by giving antibiotics into feed or livestock rations. Antibiotics given to chickens aim to reduce harmful microorganisms in the
digestive tract of chickens. Despite the well documented beneficial effects of antibiotics in increasing poultry growth, reducing mortality and increasing resistance to disease, but antibiotic use also is associated with several disadvantages and challenges [2]. The use of antibiotics in the long run if consumed continuously will cause residues in the consumer’s body and this is very dangerous for those who consume them. Antibiotics are used to improve meat and egg production. To be more efficient in maintaining broiler chickens and not causing residues in chicken meat, we need a material that can reduce the residual effects contained in chicken meat, one of the ingredients that can be used is Synbiotic.

Synbiotic is a new term in the world of animal husbandry. Synbiotic is a combination of probiotics and prebiotics that have a synergistic effect that can improve the health status of the disease, the efficiency of feed ingredients, antibacterial activity, immunity to infection and the performance of broiler chickens [3]. Synbiotics are the development of conventional rations with the incorporation of probiotics and prebiotics [4] which are given simultaneously. The term synbiotic is used in products containing probiotics and prebiotics in one media at a time [5]. The synbiotic can be used as a growth promoter in broiler diets and can improve the gut health [6]. According to [7] supplementation probiotic 0.4% and prebiotic 0.2% increased body weight and decreased feed conversion.

Mechanism of probiotic and prebiotic work according to [8] in increasing intestinal resistance, among others, changing the environmental pH of the intestinal tract, competing in pathogenic bacteria in the use of nutrients, stimulating pancreatic digestive enzymes in the small intestine, producing antibacterial or bacteriocin substances, and competing with bacteria pathogens to attach to intestinal villi, thereby reducing the chance of pathogenic bacteria to multiply. Thus the use of synbiotics is a combination of probiotics and prebiotics aimed at nutrition therapy and maintaining digestive health, to increase the value of food digestibility which contains a lot of crude fiber, eliminates the smell of ammonia in feces, increases the immune system, helps increase growth and productivity, competes against pathogenic bacteria which harm and improve the quality of feed by increasing protein levels. The purpose of this study was to analyze the performance of broiler using synbiotics.

2. Materials and Methods

The research was conducted in broiler cages at Lampung State Polytechnic department in May 2019. The tools used in the maintenance of broiler chickens are broiler cages, incandescent lamps, sprayers, brooders, bulkheads, scales, feed places, and drinking places. The ingredients used were Day Old Chicken (DOC) strains of CP 707, commercial feed and symbiotic. The study used broiler DOC strains of CP 707 (male and female) with a total of 200 birds obtained from the Bandar Lampung Poultry Shop which was maintained in two maintenance cages, each containing 100 chickens. The first treatment without synbiotic (control) and the second using synbiotic mixed into drinking water.

Variables observed included chicken appearance such as body weight, feed conversion, feed efficiency, and economic appearance such as benefits, break event point and income over feed cost (IOFC).

3. Results and discussion

The observations of the broiler maintenance business and business analysis that were carried out in May 2019 with a population of 200 individuals, were treated with 100 synbiotic and 100 tails were not treated. This research used synbiotics which are mixed with drinking water in broiler as much as 1 g/2 L given from 2 to 4 week. Observation data that has been obtained is presented in table 1.

Feed consumption is the amount of feed given minus residual feed. In table 4, it can be seen that there is a ratio of consumption of ration which is as much as 0.8 kg where maintenance using synbiotic consumes rations 173,300 kg while maintenance without using synbiotic consumes rations as much as 172,500 kg. This is because the feed used is complete feed, in accordance with the statement [9] the amount of consumption of rations is determined by the energy content in the ration. If the energy
content in the ration is high then the consumption of feed is low while if the energy content of the ration is low, then feed consumption will increase to meet the need for energy. Feed consumption is the amount of feed given minus residual feed [10].

Table 1. Performance of broiler using synbiotics and without synbiotics

| Parameters               | Without Synbiotics (control) | Synbiotics     |
|--------------------------|------------------------------|----------------|
| Feed consumption (g)     | 1.522                        | 1.514          |
| Body Weight gain (g)     | 1.085                        | 1.152          |
| Feed conversion Ratio    | 1.39                         | 1.32           |
| Feed efficiency (%)      | 71                           | 75             |
| Benefit (IDR)            | 592.800                      | 666.800        |
| Break Event Point (IDR)  | 23.447                       | 24.352         |
| Revenue/Cost             | 1.25                         | 1.27           |
| IOFC                     | 9.613                        | 11.013         |

Body weight gain is the value obtained from the final weighing weight maintenance subtracted from the initial weight expressed in grams. There is a difference between control (1.085 g) and using synbiot (1152 g) because of the mechanism of action the synbiotic [8] increasing intestinal endurance, includes changing the pH of the intestinal tract, competing in pathogenic bacteria in the use of nutrients, stimulating pancreatic digestive enzymes, producing antibacterial or substances, and compete with pathogenic bacteria to attach to intestinal villi, thereby reducing the chance of pathogenic bacteria to multiply.

The feed conversion of control (1.39) was higher compared with synbiotic (1.32). The data showed that using symbiotic made better performance, so the conversion rate with synbiotic was lower. The feed conversion is the amount of ration needed to produce weight gain. The higher feed conversion means the more wasteful rations [11]. This several influenced of feed conversion, according to such as factors such as the research of [12] such as body weight, breed, type of chicken, climate, environmental, equipment sanitation, and diseases.

The feed efficiency is to find out the percentage of ration consumed by broilers to produce body weight. According to [3] using synbiotics improved the feed efficiency by suppressing competition between hosts and microbes in several mechanisms, so increased body weight and decrease feed conversion ratio.

Broiler farming is a profitable business, from the results of table 1 showed that the profits using synbiotics obtained amount IDR 666.800 was higher than control IDR 592.800. From these data it can be seen that broilers with additional synbiotics more profitable than control.

The break event point (BEP) obtained from broiler sales without treatment was IDR 23.447, the profit was IDR 5.928 per chicken with an average sales of IDR 29.375. The BEP from broiler using synbiotics is IDR 24.352, so the profit was IDR 6.668 with an average sales of IDR 31.102. Whereas broiler revenue per cost of control was 1.25, so each IDR earns 1.25. The broiler revenue per cost using synbiotics was 1.27, so each IDR earns 1.27. The income over feed cost is calculating the profits obtained by the sale of chicken minus the cost of feed, which is added to the price of DOC. The IOFC of control was IDR 9.613 was higher than treatment was IDR 11.013.

4. Conclusion
The administration of synbiotic increase feed consumption, body weight, feed efficiency, break event point and revenue cost, but decreases feed conversion than control. Addition symbiotic improve performance and economic appearance.
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