Broiler farmers response to use of phytobiotics as substitute antibiotic growth promoters

Jaisy Aghniarahim Putritamara¹ Nanang Febrianto²; Awang Tri Satria¹ ; Yuli Frita Nunungtyas²

¹Socioeconomics Department, Faculty of Animal Science, Brawijaya University, East Java, Indonesia.
²Animal Nutrition Department, Faculty of Animal Science, Brawijaya University, East Java, Indonesia.

E-mail: jaisyap@ub.ac.id

Abstract. The research objective was to analyze the characteristics of broiler farmers in the use of herbal feed ingredients as additive feeds, analyze farmers’ culture in applying herbal ingredients in feed and analyze farmer responses to the use of herbal feed ingredients (phytobiotic content) in reducing AGP (Antibiotic Growth Promoter) residues in broiler meat. The study was conducted in the Turen sub-district of Malang Regency. The number of respondents in the study was a total sampling obtained by 157 farmers. Data analysis using quantitative methods with multiple regression. The results showed that factors affecting farmers using phytobiotic-based additive feeds were education level, intrinsic motivation, extension intensity, income, broiler business experience, price of phytobiotic-based additive feed and AGP-based feed prices. The habit of providing AGP-based feed was quite high, but the response to phytobiotics was also high, but in practice there was still little because of the lack of knowledge of farmers to phytobiotic. Socio-economic factors of farmers affect 84.2% of the use of phytobiotics. The culture of antibiotic use was influenced by several factors including farmer education level, farmer income and phytobiotic feed prices.

1. Introduction

Increased animal protein needs have increased along with the increasing openness of information, thus increasing public awareness to consume nutritious foods especially of animal protein. This causes the sub sector livestock has a major role in the effort support the improvement of the national economy, because basically the animal protein needs that can not be replaced with other proteins.

Broiler meat is one of the products livestock animal protein sources needed by the community because it is more affordable than meat from livestock products more, then the maintenance process are likely to quickly cause the growth of broiler fast, so people prefer products from meat broiler compared to other meats that a longer harvest period. But in broiler breeding period, the highest costs to be sacrificed by the farmers is mainly broiler feed costs as livestock producers of meat then the cost can range between 70-80%. So one way to reduce the cost of an increase in the cultivation process is to add the feed additive in feed. Extra purpose feed additive in addition to reducing the cost of feed is also to reduce the feed containing residues of chemicals in chicken meat so bad for the consumer. In the era of free trade increasingly stringent assessment of food products for residues of antibiotics and pesticides are more in number, besides the public interest against the higher kitotefin meat for avoiding degenerative diseases. One of the efforts is to use herbs as basic feed one of them is the research conducted by Hadi in addition to the public interest on the higher kitotefin meat for avoiding...
degenerative diseases. One of the efforts is to use herbs as basic feed one of them is the research conducted by Hadi in addition to the public interest on the higher kitotefin meat for avoiding degenerative diseases. One of the efforts is to use herbs as basic feed one of them is the research conducted by Hadi and Sidik, 1992 and Hadi, 1996 that ginger can increase the excretion of bile and cholesterol that farmers hope to re-use herbal ingredients are added in the feed to improve the productivity and performance of broiler without any negative side effects to consumers of chicken.

Efforts in utilizing herbal plants in the feed is phytobiotics use in rations. phytobiotics an extra ration from plants (Zuprizal, 2004). Some types of plants used is a plant with contains oil in kencur been used to treat upper respiratory tract infections (HEyne, 1991) and acts as an appetite enhancer (Afriastiani2004 and Herdjoko, 2005) and starfruit that can augment expenditure of bile (Wijayakusuma and Dalimartha, 2001). betel function as antiseptics, antioxidants and fungicides, while the essential oils contained capable against some gram-positive and gram-negative (Moeljanto and Mulyono2003 and Marwati et al., 1995) and also with ginger (Hadi and Sidik1992 and Hprecious, 1996), garlic contains alisin serves as a natural antibiotic could eradicate microbes in the gut (Syamsiah and Tajuddin2005), volatile oils containing antiseptics power (Sundari et al., 1992).

Based on the existing content in herbal plants for feed purpose is to inhibit the growth of pathogenic bacteria and to improve the microbial balance in the intestinal tract so that it can improve the digestibility and absorption ration and performance in broiler chickens can be increased. Therefore, to use in rations phytobiotics hope will give a positive response broiler farmers and were able to reduce the use of antibiotics on the type of Oxytetracycline commonly used by broiler farmers.

2. Materials and methods
Research conducted in Talangsuko village Turen Malang regency subdistricts of the implementation period from December to January 2019. The sample was randomly determined by purposive sampling but the people as farmers belonging to the small scale of the ownership below 20,000 and a long tail businesses broiler breeding at least 5 years and farmers age at least 20 years, so farmers are included in the criteria used as respondents.

The data used in the research is the primary data in the form of interviews with farmers who use antibiotics and farmers who use phytobiotics randomly. The study used quantitative data analysis using multiple regression. Regression analysis is one statistical data analysis technique that is often used to examine the relationship between several variables and foresee a variable (Kutner, Nachtsheim and Neter, 2004). In examining the relationship between several variables using regression analysis, researchers must first define a variable called the dependent variable and one or more independent variables. If you want examined the relationship or the influence of the independent variables on the dependent variable, the regression model used is a simple linear regression model. Then If you want examined the relationship or the influence of two or more independent variables on the dependent variable, the regression model used is multiple linear regression model (multiple linear regression model). Here is a multiple regression equation response of farmers to administration as an additive phytobiotics broiler.

\[
Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10}
\]

information:
Y = Response of farmer to use phytobiotics for replaced antibiotics
X1 = Level of Education
X2 = Motivation
X3 = Intensity of extension (times / year)
X4 = income farmers (IDR / month)
X5 = Experience (years)
X6 = Operating Costs farmers (IDR / month)
X7 = The cost of the non-operational farmers (IDR / month)
X8 = Price of feed formulations phytobiotics (IDR / kg)
X9 = Content of antibiotics in feed prices (IDR / kg)
a = constant
b = beta coefficient
3. Results and Discussion

3.1 Factors Affecting Farmers in Using Phytobiotics-Based Feed Supplement

The results showed that the factors affecting farmers in the use of additive feed based phytobiotics is the education level of farmers, farmers intrinsic motivation, intensity extension, income, business experience broiler, additional feed prices phytobiotics based and AGP-based feed prices. The influential factors of 84.2% and the remaining 15.8% is influenced by other variables outside the research. Here's a table of the results of multiple regression analysis.

| variables                                             | β coefficient |
|-------------------------------------------------------|---------------|
| constants                                             | 45.470        |
| Education level (X1)                                  | 6.612 ***     |
| Motivation (X2)                                       | 5.140 *       |
| The intensity of Extension (X3)                       | 5.017 *       |
| income farmers (X4)                                   | 5.725 ***     |
| Experience (X5)                                       | -0.188 *      |
| Operating Costs farmers (X6)                          | 0.167         |
| Non-operating costs farmers (X7)                      | 0.150         |
| the price of feed formulation phytobiotics (X8)       | -0.448 ***    |
| content of antibiotics in feed prices (X9)            | 0.556 **      |
| The coefficient of determination (R2)                 | 84.2%         |
| F count                                               | 29.111        |

Based on the research results of the regression equation 1. As the information table below:

\[ Y = 45.470 + 6.612X_1 + 5.140X_2 + 5.017X_3 + 5.725X_4 - 0.188X_5 - 0.448X_8 + 0.556X_9 \]

The equation explains that although no research done in the case of animal feed utilization ratio based phytobiotics with antibiotics then the response of farmers to phytobiotics to be applied against the influence of 45.740 broiler feed. Mathematical assumption that if the variables that affect the response of farmers to use phytobiotics is 0 then the Y value remains equal to 45.470 (constant magnitude).

3.2 Level of Education

Results of the analysis that the value of the beta coefficient for educational level was 6.612 ***. The meaning of these values is expressed that the level of education a positive effect on the response of farmers to use phytobiotics in feed. The increasing level of 1% of respondents will increase the response of farmers to the use of antibiotics at 6.612%. The majority of respondents were high school education and some farmers have a history of education up to primary school. This indicates that highly educated farmers will be more open insight and knowledge compared with low-educated farmers because of limited knowledge. Based upon the results of interviews with respondents that the majority of farmers with little education have the mindset that raising broiler just based on the harvest so quickly without having to consider about the quality of the feed, good for basal feed or feed supplement. Additional food types used by farmers mostly contains antibiotics. Weakness farmers who use this type of additional feed containing antibiotics are cattle resistant to antibiotics and antibiotic residues in broiler meat so high that if consumed in the long term health problems in humans who consume meat broiler. The survey results that many farmers use antibiotics Oxytetracycline. Overlapping broiler farmers are still not fully able to implement Good Agricultural
Practices (GAP). GAP few farmers who understand the lack of knowledge about the application of GAP. The reason farmers have not applied the GAP are the low horizons farmers to improve the quality of broiler meat, farmers are reluctant to apply the GAP because willpower is low and farmers are reluctant to perform system GAP because it feels cumbersome, while the desire is to increase the productivity of broiler with a short time, in addition to the activities of farmers was farming then the time spent on the short breeding.

Widayati et al. in 2012 also said that education is very influential on knowledge. The higher the level of one's education, the more easily they accept the information. As more information is received, the easier and faster for people to update their knowledge and forms the basis of cognitive intact on a matter. Furthermore, a high level of knowledge about antibiotics have a positive effect on the behavior of the use of antibiotics.

3.3 Farmers motivation to provide feed-Based phytobiotics

Based on the analysis of data using multiple regression that the beta coefficient indicates the value 5.140 *. These values indicate a positive effect on the response of farmers motivation phytobiotics use as a feed supplement. Increasing the motivation of farmers at 1%, it will increase response phytobiotics broiler farmers to use as a feed supplement of 5.140%. This value indicates that the motivation of farmers in improving the quality of broiler meat is through the use of phytobiotics that leaves no residue in meat that is safe for consumption. It is offset by having knowledge of farmers. The more farmers have a lot of insight and knowledge about the impact of the use of antibiotics farmer will switch to using phytobiotics. One of these farmers use garlic as a feed additive. Interest farmers use garlic that their phytochemical compounds capable of inhibiting the growth of pathogenic microbes in pencernan tract digestibility of chicken that can optimize the productivity increases. additive feeding garlic performed in a frequency of 1 times a day in the morning.

Motivation is the key driver of morale, discipline and work performance in raising sheep. The level of motivation among different farmers. farmers 34 with high motivation are expected to prioritize its work and implement them in earnest and responsible. To explain the motivation of raising sheep will use the theory of Existence Relatedness, and Growth (ERG). These needs are: (1) the need for the presence (existence), (2) the need relates (relatedness), and (3) the need to grow (growth needs). A farmer will be motivated to meet whatever needs are prepared prepoten or the most powerful, at any given moment. Preparation depends on the individual experience needed and the experiences that have just been experienced. These needs can be considered as a means of energy, or triggers that cause behavioral reactions. (Hambali, 2005).

3.4 Intensity of Extension

Based on the results obtained by the intensity of the beta coefficient of extension 5.017. The meaning of these values is the increased frequency of counseling related to increasing the knowledge of farmers on good agricultural practices (GAP), Good Farming Practices (GFP) in the use of phytobiotics as improving the quality of the meat by 1%, it will increase the response of farmers to use phytobiotics in feed. Excellence phytobiotics use as additional feed is materials are available and the price is cheap, while the weakness is due to the content in the form of a natural substance so the impact is not as fast to use antibiotics. So far, farmers have not received the training is education in the information surrounding the use of natural substances as feed additives and adverse effects of antibiotics in feed.

Widayati et al (2012) which states that the need to increase knowledge about the proper use of antibiotics and the need for intervention to reduce misconceptions about the use of antibiotics and increasing public awareness about the risks of improper use of antibiotics in the community. Intervention in the study counseling is given directly to the public. Prior to the extension majority of respondents knowledgeable unfavorable, ie 53.3% and after extension obtained most respondents have fairly good knowledge, ie 42.7%, but the largest increase was in good knowledge where before illumination only 9.3% to 40%.

3.5 Broiler farmers Income

Based on the results of data analysis that the value of beta coefficient is the farmer's income *** 5.725. This value indicates that the income of farmers positive effect on the response of farmers to
feed phytobiotics as a feed additive. Increasing farmer incomes by 1%, it will increase response phytobiotics farmers to use as feed supplement. Additional commercial feed containing antibiotics kind of Oxytetracycline at a price of Rp 7,000, - while feed mixture used with the addition phytobiotics farmers is Rp 7,200, -. farmers consider the margin worth USD 200, - with a faster growth rate in comparison to the use of phytobiotics. farmers use more of the content feed antibiotics with cheaper prices and faster growth rate, but the negative impact on consumers higher broiler meat. So with the use of phytobiotics is the compliance with the government's recommendation for a ban on the use of antibiotics as a feed supplement above 1%. Ban the use of antibiotics as feed additives contained in Article 16 to Regulation No. 14/2017 on Classification of Veterinary Drugs. Through the government's policy in controlling the use of AGP, the hope is to contribute greatly to antimicrobial resistance. Based on research conducted by Chaudhry (2014) that there is a difference between the level of knowledge of the socioeconomic status of respondents primarily for income.

3.6 Experience

Based on the research that experience has a negative effect on the response of broiler farmers in the use of feed made from phytobiotics. The longer the farmers experience running a business then the less the response of farmers in using phytobiotics, so based on the statistical results that the growing experience of raising as much as 1%, it will reduce the level of responsiveness of farmers to the use-based feed supplement amounting phytobiotics 0.188%. Based on the results of the survey that farmers have over 10 years of business long run broiler farm then use the higher AGP, because of the experience of the farmer just wants fast broiler production and lower FCR regardless of antibiotic resistance.

Compatibility characteristics which constitute innovation conformity with the values, mores existing, past experience and the needs of the recipient, is shown from the hospitality herbal feed additives on the environment, because it does not contain chemicals that are harmless (Sari, 2009).

3.7 Price-Based Feed phytobiotics

Based on the research that the increasing price of feed supplement based phytobiotics Rp 1, - it will lower the response of farmers to use feed-based phytobiotics amounting to 0.448% for farmers assume that the price of AGP cheaper than the additional feed based phytobiotics, than the level of productivity of broiler more faster than with phytobiotics, then using AGP will increase profits broiler farmers.

3.8 Price-Based Feed Antibiotics

The research concludes that the increase in antibiotic-based animal feed prices have a positive influence on the response of farmers to the use-based feed supplement phytobiotics, the increasing price of feed AGP Rp 1, - it will increase the number of farmers who responded phytobiotics-based feed supplement for 0.556%.

4. Conclusion

Factors affecting farmers in the use of feed additive based phytobiotics is the education level of farmers, farmers intrinsic motivation, intensity extension, income, business experience broiler, additional feed prices phytobiotics based and AGP-based feed prices. The influential factors of 84.2%. Cultural use of antibiotics is influenced by several factors such as the level of education of farmers, farmer income and the price of feed phytobiotics. The higher the education, the response of farmers to use phytobiotics will also be higher because of the understanding of the residue and the side effects of the use of antibiotics that are harmful to consumers even though the phase growth is not as fast as the use of AGP. The higher the income of farmers then use phytobiotics response is also higher. For higher income earned from the farmers is a method of minimizing the cost of feed rations with the addition of plants. The higher the price of plant-based feed supplement, the lower the response of farmers to use phytobiotics because herbs are plants that are also consumed by humans, so the market often have fluctuating due reference to the market price and consumer income.
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