International Journal of Advanced Culture Technology Vol.12 No.1 287-292 (2024)
DOI https://doi.org/10.17703/IJACT.2024.12.1.287

IJACT 24-3-37

A Study on the Comparison of Odor Reduction by Livestock Farming Using Abelmoschus Manihot Jinhuakui Feed Additives

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Abstract

The problem of odor and environmental pollution caused by livestock manure is spreading greatly as a social issue. To reduce the odor of livestock raised in livestock farms and improve the farm environment, raw materials of Abelmoschus manihot Jinhuakui were put into feed additives to measure the state of odor. It is characterized by being non-toxic and sweet, and Abelmoschus manihot Jinhuakui, which contains abundant nutrients that are beneficial to health in all parts such as roots, stems, and flowers, is a medicinal plant that cannot be discarded. In particular, it has the effect of helping bowel movements because it stimulates bowel movements. Ammonia levels were investigated through the KS X 3279 national standard-applied smart livestock IoT hub sensor pack installed at Flower Garden and Ugil Farm. The purpose of this paper is to reduce the odor that is the most problematic on farms and improve the environment, and it is planned to expand research into deodorants after feed additives. It is hoped that the research results will solve the livestock problem and help livestock farmers.

Keywords: *Odor reduction, Biodegradation, Eco-friendly, Feed additive, Eliminate odor*

1. Introduction

Livestock odor has a serious impact on the health of livestock and humans, and there is a lot of interest in Livestock farms are increasing the amount of livestock manure generated due to excessive use of protein feed and high-density breeding environments. Ammonia is a representative odor substance in pig houses, and it has been the subject of many studies because it is considered a major cause of odor generated from livestock manure and livestock management facilities [1]. Recently, in order to remove odors generated from pig houses and improve the environment, environmental improvement agents are being distributed mainly by local governments [2]. Currently, domestic livestock farms are attempting to reduce odors by using unverified environmental improvement agents without clear alternatives [3]. It can be said that a fundamental improvement effect is possible to reduce harmful gases by reducing the number of harmful microorganisms in feces discharged by acting on the digestive system of livestock and improving the intestinal environment [4]. It can be said that the fundamental improvement effect is possible [5]. In order to improve the problem of odor reduction in livestock sites, this study aims to use case studies and ' Abelmoschus manihot Jinhuakui feed additive' that can improve the intestinal environment of livestock, reduce odors caused by livestock excrement, and improve the productivity of livestock farms.

Manuscript received: January 29, 2024 / revised: March 2, 2024 / accepted: March 10, 2024
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2. Feed Additives and Experimental Methods

Abelmoschus manihot Jinhuakui was chosen as an eco-friendly feed additive to help reduce odors. It is a medicinal plant that has nothing to throw away because it is not toxic and has a sweet taste, and because all parts, including roots, stems, and flowers, contain abundant nutrients that are beneficial to health. It is effective in helping bowel movements and is effective in fever reduction. It also contains essential amino acids and trace elements, and has the effect of enhancing immunity. Because it is a plant that is very rich in collagen, it removes wrinkles and makes the skin shiny. Linolenic acid contained in Abelmoschus manihot Jinhuakui is an unsaturated acid that is good for the skin and is good for various diseases such as dermatitis in the body. It has antibacterial and antiviral effects and anti-allergic effects by acting as an antioxidant to remove active oxygen in the body. To investigate the odor generated from each pig farm, a KS X 3279 national standard applied smart livestock IoT hub sensor pack was used. The product collection module can check the sensor value through the KS 3279 standard through RS485. Industrialization, there is a need to approach from the perspective of management and to develop diverse capability in order to maintain the competitive edge over other villages [6].

3. Background of Odor Reduction

3.1. Ugil Farm

Depending on the feed of the deodorant, As shown in Figure 1 the concentration of ammonia is reduced and maintained from a the salary of the deodorization system using the Abelmoschus manihot Jinhuakui rule, but it was reduced to a one-month continuous salary.

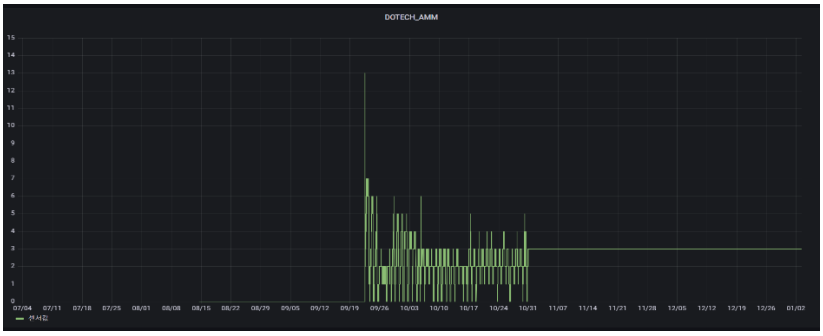

Figure 1. Ammonia concentration (ppm)/ Data collection period: 23.9.22~10.31

In the current graph, the level of ammonia is significantly reduced and maintained below 1 ppm. It can be seen that the odor reduction effect of the deodorant added with Abelmoschus manihot Jinhuakui is effective. As shown in Figure 2 feeding the deodorant used in the experiment on the farm can reduce the odor generated on the farm, and the number is likely to fall further as the period of use increases.

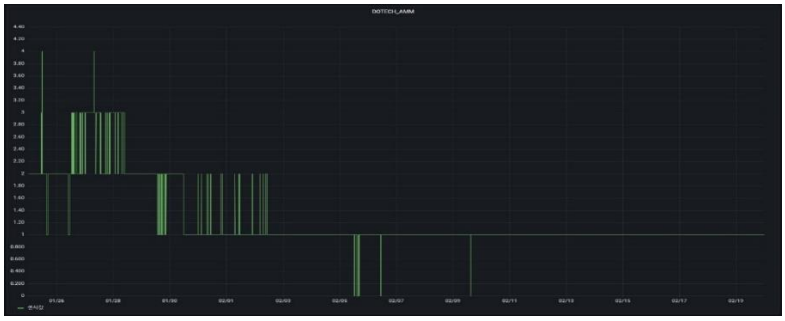

Figure 2. Ammonia concentration (ppm)/ Data collection period: 24.01.25~02.20

Ammonia levels are reduced from above 20 to 7.5 and levels are kept constant. As shown in Figure 3 can be seen that the effect was insufficient at the beginning of the salary of the deodorization system using the gold currency rule, but it was reduced to a one-month continuous salary.

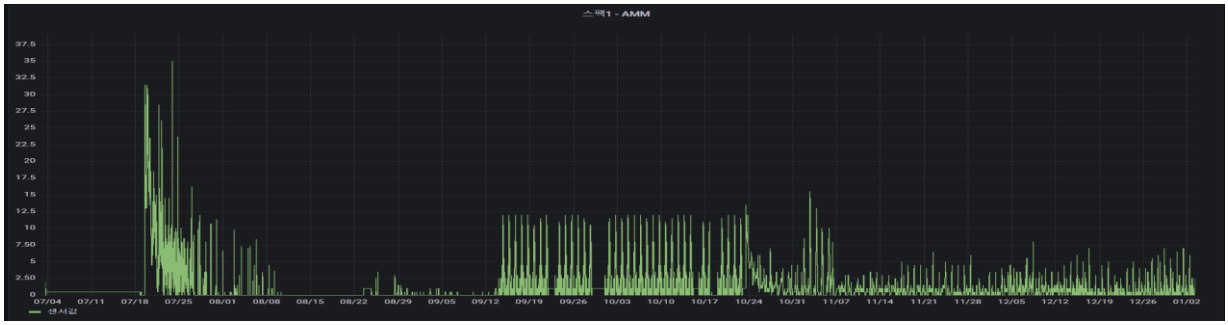

Figure 3. Ammonia concentration (ppm)/ Data collection period: 23. 11.08~12.20

As shown in Figure 4 in the current graph, the level of ammonia is significantly reduced and maintained at 5 or less. It can be seen that the odor reduction effect of the deodorant added with Abelmoschus manihot Jinhuakui is effective. Feeding the deodorant used in the experiment on the farm can reduce the odor generated on the farm, and the number is likely to fall further as the period of use increases.

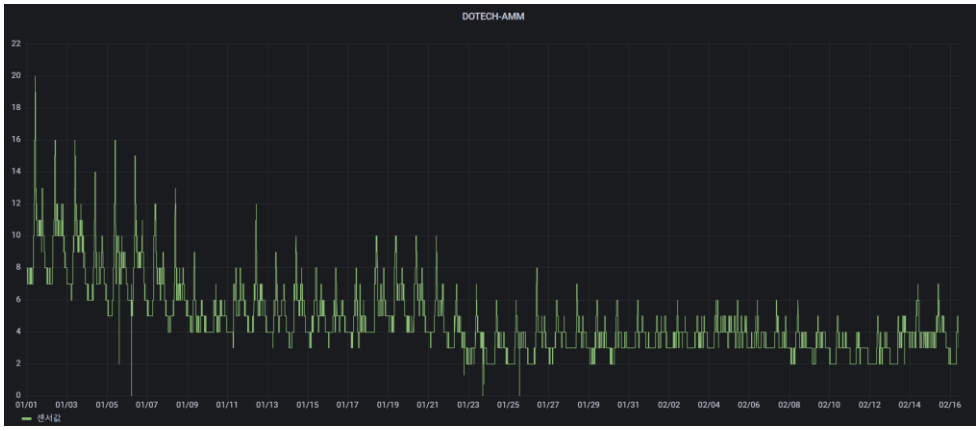

Figure 4. Ammonia concentration (ppm)/ Data collection period: 24. 01.01~02.16

3.2. Chemical Odor Reduction Method

Most Analysis of ammonia levels. As shown in Figure 5 over a period of approximately a month, feeding results showed ammonia levels decreased from an average of 20 ppm, up to 25 ppm to an average of 12 ppm, and to a minimum of 8 ppm. Confirmation that there is a certain effect of reducing odor. Given that the trend of the graph continues to decline, the figure is expected to be lower if the deodorant containing Abelmoschus Manihot Jinhuakui is used continuously.

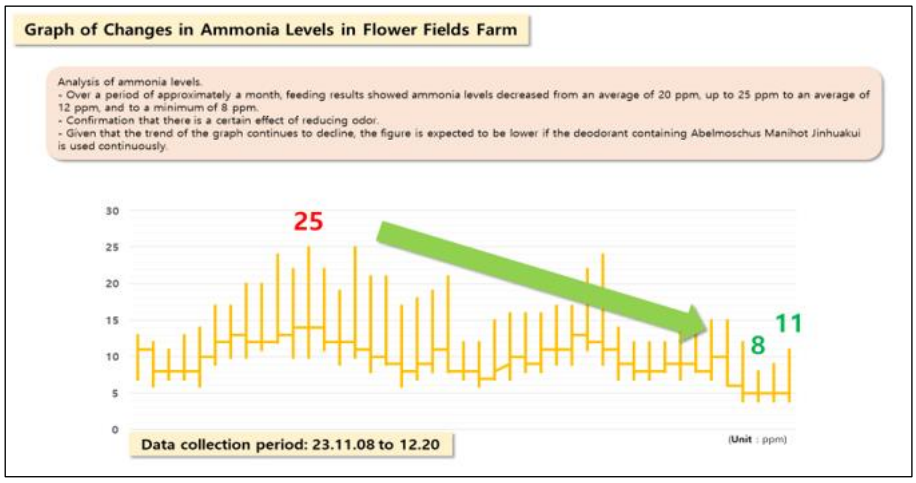

Figure 5. Graph of Changes in Ammonia Levels in Flower Fields Farm(23.11.08~12.20)

Analysis of ammonia levels. Data from January 1 to February 16 of additional flowerbed farms and records from November 8, the data from the previous slide, show a continuous downward graph. As shown in Figure 6 the average ammonia level decreased from an average of 20 ppm (data from Nov. 8 to Dec. 20) to a current average of 5 ppm, maintained by approximately two months of feeding from Nov. to Feb. 16. It can be seen that the deodorant using Abelmoschus Manihot Jinhuakui has a significant ammonia inhibition and reduction effect. Continuous use is expected to be an advantage for farm management as it can reduce and maintain odors.

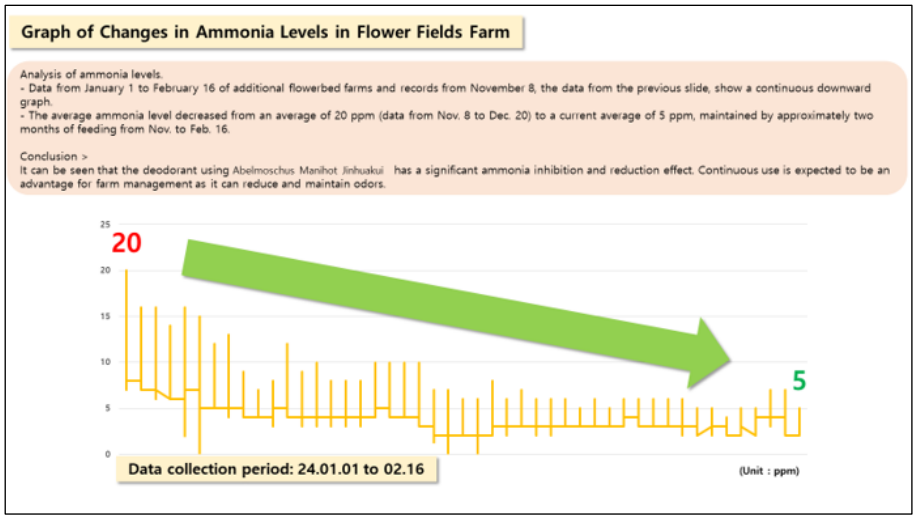

Figure 6. Graph of Changes in Ammonia Levels in Flower Fields Farm(24.01.01~02.16)

Analysis of ammonia levels. As shown in Figure 7 over a period of approximately a month, feed results showed ammonia levels decreased from an average of 4 ppm, up to 4.5 ppm to an average of 3 ppm, and a minimum of 2 ppm. Confirmation that there is a certain effect of reducing odor. Given that the trend of the graph continues to decline, the figure is expected to be lower if the deodorant containing Abelmoschus Manihot Jinhuakui is used continuously.

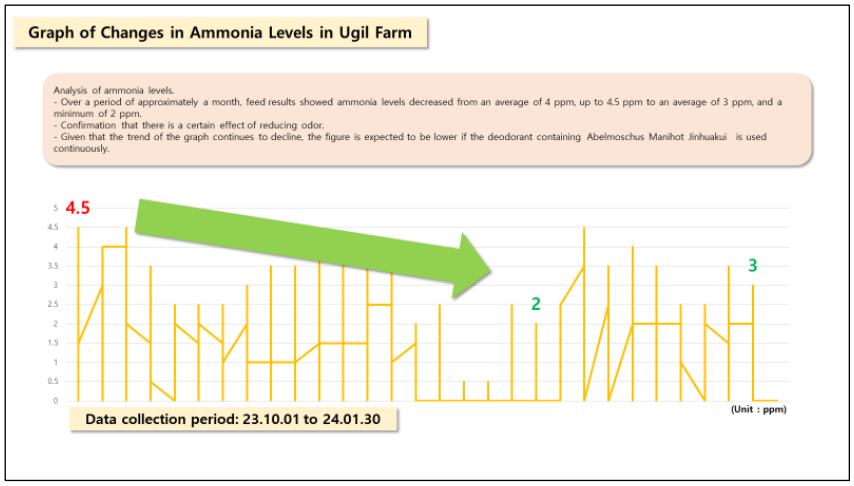

Figure 7. Graph of Changes in Ammonia Levels in Ugil Farm(23.10.01~24.01.30)

Analysis of ammonia levels. Data from January 25 to February 20 of additional Ugil Farms and records from October 1, the data from the previous slide, show a continuous downward graph. As shown in Figure 8 average ammonia levels decreased from an average of 4 ppm (data from Oct. 1 to Oct. 30) to a current average of 1 ppm during the period from Jan. 25 to Feb. 20, and remained. It can be seen that the deodorant using gold coins has a significant ammonia inhibition and reduction effect. Continuous use is expected to be an advantage for farm management as it can reduce and maintain odors.

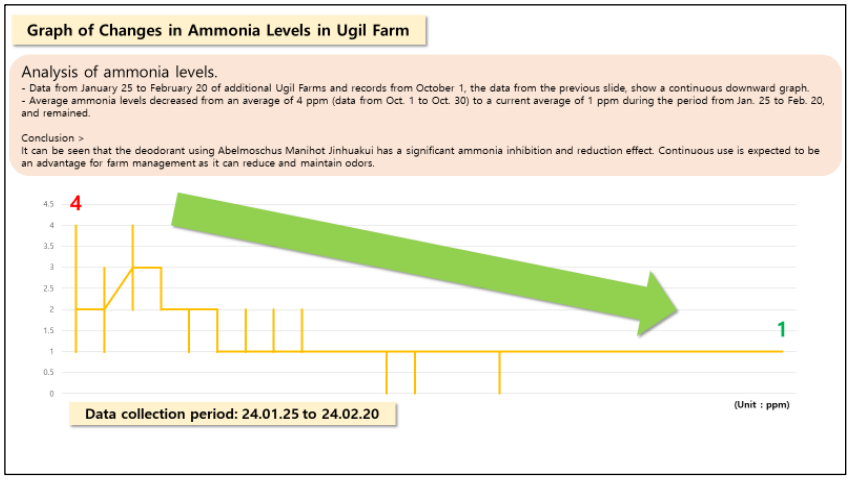

Figure 8. Graph of Changes in Ammonia Levels in Ugil Farm (24.01.25~24.02.20)

5. Conclusions

Based on the experimental results of Ugil Farm and Flower Garden Farm, deodorant using Abelmoschus Manihot Jinhuakui has been proven to lower ammonia concentration and temperature. The effects and efficacy of deodorants are demonstrated to be effective even in a short period of time, and their efficacy is further increased when used for a long time. The decrease in ammonia in flower garden farms decreased from up to 20 ppm to less than 5 ppm, and maintenance was confirmed. In the case of Ugil Farm, it was confirmed that it was reduced and maintained to less than 1 ppm, which is lower than the minimum ppm of 5 in the flower

garden farm. From this result, it can be confirmed that deodorants have the effect of reducing ammonia even on different farms, and the longer the period of use, the more the effect increases.
Based on the experimental results of Ugil Farm and Flower Garden Farm, the deodorant using Geumhwa-gyu was proven to have the effect of lowering the ammonia concentration and temperature. It has been proven that the effect and efficacy of the deodorant are exhibited even in the short term, and the effect is further increased when used for a long time. It was confirmed that the decrease in ammonia in the flower field farm was reduced from a maximum of 20 ppm to less than 5 ppm. In the case of Ugil Farm, it was confirmed that it decreased and maintained to less than 1 ppm, which is lower than the minimum ppm of 5 in the flower field farm. Through this result, it can be confirmed that the deodorant has the effect of reducing ammonia in different farms, and the effect increases further as the period of use increases.
The advantage of this on the farm is that the odor of the farm decreases due to a decrease in the concentration of ammonia. It can reduce the problem of odor that spreads to the outside and reduces the stress generated by living by reducing the odor felt by workers or livestock inside. We can see that there is a possibility that the performance of the future shipment period may be advantageously affected by improving the convenience of breeding and solving the problem of decreasing intake by reducing the stress caused by the odor and heat of livestock. It is thought that the temperature inside the farm can be reduced, thereby reducing the thermal stress felt by livestock in their lives. In addition, we want to conduct experiments and secure data in spring and fall, which have fewer environmental factors, and we hope that this data will help reduce farm odors.

Acknowledgement

This paper received LINC3.0 research project support.

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