

***DETECTION OF TEMPERATURE, HUMIDITY AND AMMONIA GAS
WITH INTERNET OF THINGS BASED CONTROL AUTOMATION USING
FUZZY LOGIC METHOD***

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ABSTRACT

Maintaining laying hens is important to increase productivity and quality of eggs produced during the production process. Chicken comfort is influenced by the temperature and humidity of the air in the coop, as well as the ammonia gas content in the chicken droppings. Manual control of temperature, air humidity and spraying ammonia gas by breeders takes a long time and is inaccurate. Therefore, it is necessary to control temperature, air humidity and ammonia gas in the chicken coop using sensors to obtain data that can be monitored using a smartphone, making it easier for farmers to monitor the coop. This control is carried out by automating the spraying of cooling water and prebiotic liquid using the Fuzzy Logic method to determine spraying decisions. The Fuzzy Logic system values and Fuzzy values from manual calculations are compared using confusion matrix calculations to obtain accuracy values. The calculation results show that the fuzzy method produces high precision (100%), but recall is still low, especially in the case of water spraying (18%) and prebiotic watering (43%). Nevertheless, the overall accuracy can still be improved (38% and 58% respectively), and it is necessary to expand and improve the method to improve recall, overall accuracy, and f-measure. Although the system has provided good results in precision, improving the ability to detect cases that require water spraying or prebiotic dousing is key. This contribution to innovation is expected to open up further opportunities with increased accuracy of response to simultaneous changes in gas dynamics, temperature and humidity, which has potential for a wide range of industries.

Keywords: *Temperature, Humidity, Ammonia, Laying Chickens, Fuzzy*