

ABSTRACT

Most poultry house lighting systems are not focused on maintaining stable light intensities, which highly influence the welfare and productivity of chickens. Insufficient or excessive light causes stress for them, including interference with feeding and sleeping, which results in poor growth. Therefore, to obtain optimal and stable lighting, a PID control system of light intensity in the poultry house is needed, assisted by a Raspberry Pi microcontroller and a BH1750 sensor so that the system can work digitally and in a more modern manner. In a PID control system, a tuning method is necessary to determine the PID parameters like K_p , K_i , and K_d . One of the tuning methods used is the Ziegler–Nichols method, which determines these parameters based on the step response graph of the system when an input change occurs; thus, it is an open-loop method. From this method, the obtained PID parameters are $K_p = 1,2$, $K_i = 4,83887096774$, and $K_d = 0,07464$. These parameters produce a PID graph response that closely approaches stability at the target light intensity setpoint of 20 lux, even when various input changes and external disturbances are applied.

Keyword : poultry, system, light, PID, methods, graph