

***Implementation of IoT and Fuzzy Methods in Monitoring Systems for CO NH3
and NO2 Emissions in the Agricultural Sector***

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ABSTRACT

Air pollution due to human activities is increasing and has a negative impact on human life and other living things. One sector that contributes to increasing levels of air pollution is the agricultural sector. Agricultural activities produce gas emissions such as carbon monoxide (CO), ammonia (NH₃), and nitrogen dioxide (NO₂) through processes such as rice cultivation, use of urea, use of lime, and burning of biomass. The agricultural sector globally contributes around 14% to greenhouse gas emissions, and nationally contributes 7%. To solve this air pollution problem, effective prevention measures are needed. Therefore, this study aims to develop an Internet of Things (IoT)-based air pollution monitoring system in the agricultural sector that can detect CO, NH₃, and NO₂ gases. The fuzzy method will be used in this system to determine the category of air quality levels on agricultural land. The results of testing the use of the Tsukamoto fuzzy method in this study obtained results that were equal to 0,136%.

Keywords : *Air Pollution, Agriculture, Internet of Things, Fuzzy Tsukamoto, Carbon Monoxide (CO), Ammonia (NH₃), Nitrogen Dioxide (NO₂)*