
Abstract

In the cultivation of grapevines in greenhouses, a primary issue typically arises from the inefficiency of manually measuring CO₂ levels. This can hinder managers in optimizing the ideal growing environment for grapevines, which require CO₂ levels ranging from 400-600 ppm. The significance of this topic lies in its potential to enhance efficiency and productivity in the agricultural sector, particularly in cultivating high-value crops like grapes. The proposed solution involves implementing Internet of Things (IoT) technology using fuzzy logic to manage CO₂ sensor data within the greenhouse. Through a wireless sensor network (WSN), CO₂ data is periodically transmitted to a server, which processes it to provide real-time recommendations on optimal CO₂ levels. A web platform will facilitate managers in monitoring environmental conditions and taking necessary actions promptly. The primary expected outcomes of this research include improving grapevine quality and operational efficiency in cultivation, supported by empirical evidence on the relationship between CO₂ levels and grape harvest quality in the IT Telkom Surabaya greenhouse.

Keywords: CO₂, Fuzzy, Greenhouse, IoT, WSN
