

ABSTRACT

Rice growth occurs in specific stages that are critical for agronomic decision-making, such as fertilization, pest control, and harvest scheduling. Agricultural extension workers, particularly at BPP Karang Tengah in Cianjur, play a vital role in monitoring these growth phases. However, they face challenges, including a limited number of extension workers and extensive land coverage. To address these challenges, a digital image-based rice growth phase detection feature has been developed on the KawalTani.id platform. This feature leverages the YOLOv8 algorithm (You Only Look Once version 8), which can automatically detect rice growth phases: V1 (early vegetative), V2 (late vegetative), G1 (reproductive), and G2 (maturation). The development of this system followed the Scrum method, which promotes iterative and adaptive responses to changing needs. Testing of the system was conducted through two types: model testing and input-Output testing. In model testing, the best configuration was achieved with a model that ran for 200 epochs, resulting in the highest performance with a mean Average Precision (mAP) value of 0.82. In the input-Output testing, 30 test cases were evaluated, with 26 cases aligning with the expected results. The successful implementation of the YOLOv8 model enhances the efficiency of agricultural extension workers in identifying rice growth phases based on data. These findings demonstrate the significant potential of deep learning technology to advance the digitalization of Precision agriculture in Indonesia.

Keywords: YOLOv8, Rice Growth Detection, Agricultural Automation, Web-Based Detection