ABSTRACT

Rice leaf diseases pose a significant challenge in rice agriculture, often leading to substantial yield reductions. These diseases are caused by various pathogens such as fungi, bacteria, and viruses, which affect the growth of rice plants and the quality of the yield. Common symptoms include leaf spots, discoloration, deformities, and a decrease in healthy leaf area. Disease management strategies involve selecting disease-resistant varieties, implementing proper crop management practices, employing sanitation techniques, and using suitable disease control agents. A thorough understanding of rice leaf diseases is crucial for maintaining agricultural productivity and sustainability in rice farming systems.

In this study, the classification of diseases on rice leaves was carried out using the YOLOv8 method. This method is used because the resulting accuracy in classifying objects is quite high. In addition, with YOLOv8 the object classification process can be done in real time.

From the total dataset used 3,773 images with the division of testing data as many as 418 images, training data 2,684 images, and validation data 671 images. The results of the tests carried out obtained the best value when testing using size 224, learning rate 0.01, batch size 16, and SGD optimizer, namely precision of 0.982, recall 0.989, mAP50 0.986, and mAP50-95 0.929 and from the calculation of F1-Score of 96.2%.

Keywords: *Rice Leaf Diseases*, YOLOv8, *Python*, Google Colab