







Detection of Paddy Plant Diseases Using Google Teachable Machine

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Abstract. Malaysia faced a shortage of rice at the end of the previous year. Due to this shortage, the government had to import rice to meet the needs of the people, at the same time affecting the national economy. The shortage of rice can be caused by many factors and one of them is because of the decrease in rice production productivity due to the failure to prevent diseases that affect crop yields earlier. If no control measures are implemented after the infection begins, the disease may cause rice yield losses of up to half of the production. Hence, early detection of these diseases is important for effective management and control strategies. This study aims to develop a model that is able to detect paddy plant disease by using Google Teachable Machine. This model is compared to the model developed using You Only Look Once (YOLO) version 8. As the primary dataset has not been collected yet, this study utilized dataset from the Internet. Overall, our findings highlight the model developed using Google Teachable Machine outperforms the model developed using YOLOv8 in terms of accuracy, simplicity and performance time as it can be completed in half an hour compared to YOLOv8 which took 2.083 h to complete the training. For future study, the model from Teachable Machine will be deployed through mobile applications for disease monitoring using data from drones.

Keywords: paddy plant disease · computer vision · image processing

1 Introduction

Rice is the staple food of Malaysian people. Hence, it is very important for the government to ensure that the market supply of rice is sufficient; otherwise, the government will be forced to import rice from other nations, as happened in October last year [1]. The shortage of rice not only affects individuals but also exerts repercussions on the national economy. There are many factors that cause shortage of rice production and one of them is because of a decrease in productivity. Statistically, paddy production productivity has been decreasing since 2014 as shown in Fig. 1 and the production did not match the target set by the National Agrofood Policy 2021–2030 (NAP 2.0). One of the causes of