

# **IMPLEMENTASI IMAGE PROCESSING PADA PENYAKIT DAUN TANAMAN CABAI RAWIT DENGAN METODE CNN**

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## ***ABSTRACT***

Bird's eye chili (*Capsicum frutescens*) is a high-value horticultural commodity, yet its productivity is prone to decline due to leaf diseases such as yellow virus (Gemini virus) and leaf spot (*Cercospora* sp.). Manual disease identification by farmers remains weak, as it requires specific knowledge, and is inefficient and error-prone. This study develops an image-based CNN system with image preprocessing to identify bird's eye chili leaf diseases and evaluate its accuracy. The dataset comprised 510 images across three classes, namely Healthy Leaf, Yellow Leaf, and Leaf Spot, split into 408 training, 51 validation, and 51 testing images. The preprocessing stage included resizing images to 224x224 pixels, pixel normalization, and data augmentation through rotation, horizontal flip, and cropping. Three architectures Classic CNN, EfficientNetB0, and MobileNetV3Large were compared across various input sizes and epoch counts. Training results showed EfficientNetB0 with a 224x224 input achieved the highest training accuracy at 98.89%, while MobileNetV3Large was selected for the Android application due to its more stable validation accuracy (97.06%) and greater efficiency on mobile devices. Confusion matrix testing on that model produced an accuracy of 92.16%, with the highest F1-score of 0.97 for the Yellow Leaf class. User Acceptance Testing (UAT) results showed an average score of 81.24%, indicating the application was well received as a tool for identifying bird's eye chili leaf diseases.

***Keywords:*** *Image Preprocessing, Convolutional Neural Network, MobileNetV3 Large, Bird's Eye Chili, Leaf Disease, Image Classification.*