

## ABSTARCT

The Gambung tea and quinine research center (PPTK) in Bandung Regency is the only research center for tea and quinine plants in Southeast Asia. One that is produced at the Gambung Tea and Quinine Research Center (PPTK) is Gambung Tea. Gambung tea is classified into 11 types of tea clones, which are also called the GMB 1-11 series. The GMB series 1-5 has a total production of more than 3,400 kg by year and in the GMB series 6-11 has a total production of more than 5000 kg by year. In distinguishing GMB 1-11 series tea leaves have difficulty being able to distinguish between the types in plain view. Because this GMB series has similar characteristics and is very susceptible to errors to distinguish them. In the Gambung PPTK there are only two farmers who can distinguish them in plain view.

Previous studies have classified the Gambung Tea leaves, which examined only the superior GMB series clones (GMB1, GMB3, GMB 4, GMB 7, GMB 9). And the results obtained for the accuracy reached around 90%. In this study, classification will be carried out on all types of tea Gambung leaf clones, namely from the GMB series 1-11. The method to be proposed is the Convolutional Neural Network (CNN) method. Convolutional Neural Network (CNN) is one of the Deep Learning algorithms that is designed to process data in two dimensions, for example pictures or sounds. CNN method has several types of architecture, the architecture used in this study is VGG16net. In the learning process, VGG16net architecture uses 16 layers. VGG16net is characterized by its simplicity, using only  $3 \times 3$  convolution layers.

The results obtained from research to classify the Gambung Tea leaves on all types of GMB series 1-11 clones, which obtained an accuracy of 95.45%, loss of 4.55%, and precision of 95.81%. These results are obtained from the best parameters, namely the image size 224\*224, Adam optimizer, learning rate 0.0001, and epoch 50. And using augmentation data is as large as 3300 data.

**Kata Kunci:** Gambung Tea, Convolutional Neural Network (CNN), VGG16net