

ABSTRACT

Tobacco cultivation is a labor-intensive activity. Although the area of tobacco plantations in Indonesia is estimated to be only around 207,020 hectares, compared to growing rice, growing tobacco requires a lot of energy almost three times. Tobacco is a plant that is grown as an industrial raw material for cigarettes. Tobacco has a very promising economic value. This is in line with the excise rate which has increased by an average of 12% since the beginning of the year. The Ministry of Finance (Kemenkeu) reported that CHT receipts reached Rp. 118 trillion this year. However, the traditional method of determining the quality value of tobacco leaves has weaknesses, including that absolute standards for tobacco leaves are only predictive and have no value in determining the quality level.

During the implementation of this final project, simulations and analysis were carried out to determine the quality of tobacco leaves with inputs in the form of digital images. The method step process is to take a sample of tobacco leaves sized 400-600 mm, then take pictures with a 12 MP mobile phone 1 camera and an 8 MP mobile phone 2 camera with a 12 MP mobile phone 1 camera. The imagery is processed with simulation software using Adaptive Region Growing (ARG) and Decision Tree classification.

The program is designed using MATLAB software and displayed in the form of a GraphicUserInterface (GUI). From the test results, the accuracy rate obtained using the Adaptive Region Growing method is 93% based on 6 statistical characteristics. This research uses the GINI Index feature selection with the Decision Tree classification method. Using a dataset comparison of training data and test data of 70:30. The results of using the GINI Index feature selection obtained a result of 85%.

Keywords: *Tobacco Leaf, image processing, Adaptive Region Growing, Decision Tree.*