

## ***ABSTRACT***

The increasing need for soybeans should be followed by an increase in quality because it will affect the selling price when traded, both at the local, national and international (export) level. The Government through the National Standardization Board (DSN) has established the Indonesian National Standard for the physical quality of soybean (SNI 01-3922-1995). In the process of determining the grain is broken, broken, other colors, and dirt on soybeans done visually. Based on SNI 01-3922-1995 to determine it is done manually by sorting according to the criteria of each by using tweezers, then weighed.

In this final project, a Matlab-based system simulation is made to determine the quality of soybeans with input in the form of digital images. Soybeans used are yellow soybeans obtained from one of the main distributors in the city of Bandung. The first process that will be carried out is image acquisition, which is the collection of digital image data from each quality of soybeans namely quality I, II, III, and IV. The sample data used 240 images consisting of 100 training image data and 20 test image data for each camera (camera 1 and camera 2). Camera 1 is a mobile camera with a resolution of 13 MP and camera 2 with a resolution of 16 MP with different brands of mobile phones. Then the pre-processing is carried out, the change to a grayscale image. In the feature extraction process the Gray-Level Co-Occurrence Matrix (GLCM) method will be classified using the Decision Tree method.

On the test results, the accuracy obtained from the extraction of test data using the GLCM method using the Decision Tree classification produces a value of 95% for image data using camera 1 and 90% for image data using camera 2. The highest accuracy of 98,305 with computing time of 1,127 seconds is obtained from camera image data 1 with a total of 100 training data, 60 test data, with pixel distance = 1, and using an angle of 90°.

**KeyWord :** *Soybeans, Gray Level Co-Occurrence Matrix (GLCM), Decision Tree.*