

## ABSTRACT

Begonia (Begoniaceae) is one of the largest genera of flowering plants with the type accepted in 1839. Begonia flora in Indonesia has not been widely studied due to the lack of herbarium specimens and the availability of taxonomic information. Begonia is also a plant that has high economic value, especially as an ornamental plant. It is a pity that in Indonesia there are still many types of Begonias that are sold at high prices and come from other countries, even though the types of Begonias in Indonesia are no less interesting when compared to Begonias originating from outside. Lack of information about the existence of Indonesian Begonias is a major obstacle in the context of developing the potential of Begonias. For this reason, it is necessary to collect data and disseminate information about species of Begonias that exist in Indonesia.

This final project aims to create an application in Matlab that is able to detect and classify Begonia plant species through images using the fractal method. The classification will be divided into 3 classes, namely: *Begonia longifolia*, *Begonia aptera* and *Begonia siregar*. The data used were obtained by taking direct photos in the "Eka Karya Bali" Botanical Garden as many as 240 test data images, and 120 training data. In this study, fractals are used as feature extraction, and K-Nearest Neighbor (K-NN) is used as a classification.

From the results of the tests that have been carried out, the system built is able to detect Begonia plants through images and classify them into three classes with the highest accuracy rate of 100% and an average computation time of 13,5 seconds when the size is  $512 \times 512$  and the fractal dimension is 64, with the value of K-Nearest Neighbor (K-NN) is  $K = 3$ .

**Keywords:** Begonia, Matlab, Fractal, K-Nearest Neighbor (K-NN).