Application of Shallot *(Alium cepa var. aggregatum* L.*)* Classification Based on Diameter Size Using Artificial Neural Network

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ABSTRACT

Shallot is an agricultural commodity that has high economic value in Indonesia. So far the process for classifying the quality level of shallots is still done manually and has many weaknesses in its application, including the need for a long time and the results of the sorting obtained are not consistent. Image processing is one alternative to solve the problem. Image processing is an activity to improve image quality so that it is easily interpreted by humans or computer machines. In this study a program was made that was able to sort shallots based on area, perimeter, shape and diameter factors using image processing and artificial neural networks using the Learning Vector Quantitation algorithm. In this study artificial neural networks are applied to applications to represent image data to the system. Image data taken is onion samples after being harvested and dried using a digital camera. In this study the onion samples used were obtained from traditional markets (Pasar Bawang Kabupaten Probolinggo). In this study the optimal LVQ network parameters were obtained, namely the learning rate of 0.01 and a reduction in the learning rate of 0.25. In addition, the maximum level of accuracy of testing of 50 test data is 90% for the learning rate of 0.1 and a reduction in the learning rate of 0.25. In this study it can also be seen that the smaller the rate of learning, the lower the accuracy of the program. Whereas, changes in the rate of learning fluctuate (not certain) to accuracy.

Key words : *Shallot, Image processing, Learning Vector Quantitation*