AN ANALYZE OF A *BACKPROPAGATION* NEURAL NETWORK IN THE IDENTIFICATION OF CRITICAL LAND BASED ON ALOS IMAGERY

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Identification of critical land is generally done using the scoring method that is to say; overlay of maps consisting of variables that determine critical land. Non-scoring methods are rarely performed such as the use of Artificial Neural Networks method as conducted in this study. This study was expected to be an alternative reference method in the determination of critical land that often uses spatial data. Artificial Neural Network analysis methods have advantages in combining the spectral and non spectral data and its ability in solving complex data problems that are difficult to solve with the use of computational logic. The purpose of this study was to determine the accuracy of the identification of critical land using Artificial Neural Networks by comparing the results of classification using spectral data and non-spectral data in the identification of critical land, and determine the effect of changing parameters of Artificial Neural Networks using the Backpropagation training algorithm on the accuracy of the identification of critical lands (*iteration, the hidden layer, momentum, learning rate and RMS error*).

The research methods consists of several stages of data collection, radiometric and geometric correction and field orientation field, selection of the training areas, execution of classification results using artificial neural network method, as well as determining the accuracy of the test samples. The Sampling method used in this study was stratified random sampling. Identification of critical land is not differentiated by region because of the relatively small area coverage of study area, where most farming areas are in the forest areas. By characterizing the same region, the parameters determining the criticality of each region are not distinguishable.

The results of this research are in the form of critical lands map derived using artificial neural network classification. Merging spectral and non spectral data in this study increased the overall accuracy when viewed from all simulations conducted to compare the results of classification using spectral data. The highest accuracy was in the simulation that used 7 (seven) channels (merging spectral data and non-spectral). In testing the network, changing network parameters including every hidden layer and the number of iterations gives an effect associated with the resulting level of accuracy in the identification of critical lands.

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Keywords: artificial neural networks; backpropagation; critical land; hidden layer; ALOS imagery