

Application of Artificial Neural Network to Improve Pleurotus sp. Cultivation Modelling

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Abstract:

Mathematical modelling for nitrogen concentration in mycelium (N) during Pleurotus sp. cultivation had successfully been produced using multiple linear regression. Two different substrates were used to cultivate the Pleurotus sp. which were empty palm fruit bunch (EFB) and sugarcane bagasse (SB). Both substrates were collected and prepared as the selected factors which were type of substrate (SB - A and EFB - B), size of substrates (0.5 cm and 2.5 cm), mass ratio of spawn to substrate (SP/SS) (1:10 and 1:14), temperature during spawn running (25°C and ambient) and pre-treatment of substrates (steam and non-steam). The response was nitrogen concentration in mycelium (N). This paper presents the application of artificial neural network to improve the modelling process. Artificial neural network is one of the machine learning method which use the cultivation process information and extract the pattern from the data. Neural network ability to learn pattern by changing the connection weight had produced a trained network which represent the Pleurotus sp. cultivation process. Next this trained network was validated using error measurement to determine the modelling accuracy. The results show that the artificial neural network modelling produced better results with higher accuracy and lower error when compared to the mathematical modelling.

Keywords: Artificial Neural; Neural network;

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