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EFFECT OF INITIAL ESTIMATE OF AQUEOUS CARBON ON ANN BASED SIMULATION OF COMPOSTING OF AGRICULTURAL WASTE

SHILPA TRIPATHI AND J. K. SHRIVASTAVA

Abstract

In this work effect of initial estimates of carbon fraction in aqueous media of a composting system is studied, using ANN, for prediction of evolution of carbon dioxide, which is a measure of bacterial/ fungal activity in composting systems. Experimental data used in this analysis was derived from a composting system comprising aerobic digester for composting of a mixture of agricultural and food waste, operating in near-optimal conditions with regards to adequacy of oxygen and temperature in the system. The ANN model was assigned the task of fitting a combination of exponential functions, for two different rates of reaction, corresponding to easily and moderately hydrolysable waste. It is observed that effectiveness of ANN in predicting evolution of carbon dioxide is affected by assumption of initial value of aqueous carbon in the system, which underlines the uncertainties in prediction of dependent parameters on this assumption, when ANN model is used for simulation of composting process.