NEURAL NETWORK APPROACH TO PREDICT MILK YIELD OF DAIRY FARM

A PROJECT REPORT PRESENTED BY

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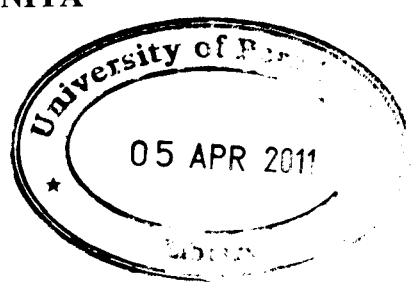*for the award of the degree of*

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Artificial neural networks (ANN) have been widely used in various fields for prediction, classification, control system and pattern recognition. In this research, ANN is used to predict the milk yield of the next month based on the meteorological data.

The data was gathered for this research between years 2001 to 2008 from the Oyamaduwa farm Vilachchiya, Anuradhapura, under the National Livestock Development Board. There are nearly 300 dairy cows in the farm. Meteorological data was gathered from the Meteorological Department in Baudhaloka Mawatha, Colombo 7.

In this prediction, 26 input variables are considered. They are: number of milking cows, number of milking cows in each lactation stage (1 to 7), number of milking cows in each milking month (1 to 13), number of rainy days, average humidity-day, average humidity-night, average temperature and total rainfall amount. There are 90 records. Of them, 72 records are used for training and the rest 18 records are used for testing. Two layered feed forward neural network is used with back propagation algorithm. Properly trained back propagation network tend to give reasonable answers when presented with inputs that they have never seen. Default back propagation algorithm levenberg –marquardt (trainlm) and scaled conjugate gradient (trainscg) are used in this work. The result is obtained with 11 neural network models which are better than with the rest of the models. The best an ANN model is obtained by using seven combined ANN result. It gives 72% success in prediction with below 10% error and 94% success in prediction with between 15% error.