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Reducing the monitoring parameters of fish pond water quality

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Abstract: A study was conducted at Auburn University, Auburn, Alabama, USA to reduce monitoring parameters in the evaluation of fish pond water qualities. Concentrations of settleable solids (Set), turbidity (Tur), total suspended solids (TSS), particulate organic matter (POM), chlorophyll-a (Chl), 5-day biochemical oxygen demand (BOD), total phosphorus (TP), and total nitrogen (TN) were measured in 50 fish ponds. The results of correlation analysis showed that there was a significant correlation ($p < 0.01$) between every pair of the eight water quality variables. By building regression models and calculating the prediction accuracy of the models, POM was selected as the most suitable variable for evaluating the water quality of fish ponds, predicting Set, Tur, TSS, Chl, BOD, TP, and TN with the lowest median of absolute percentage error (MdAPE) of 22%, 34%, 20%, 31%, 23%, 33%, and 31%, respectively. Use of POM as a surrogate for the other analyses measured in this study could result in a savings of both time and money.

Keywords: fish pond; water quality; monitoring parameters; regression

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