

Sagsak Doungmanee 2010: Forecasting of Vanamide Shrimp Production Volume Using Quantitative Models. Master of Science (Agro-Industrial Technology Management), Major Field: Agro-Industrial Technology Management, Department of Agro-Industrial Technology.
Thesis Advisor: Assistant Professor Raveepim Chaveesuk, Ph.D. 117 pages.

This research 's objective was to compare 2 forecasting techniques: an associative and a time series analysis techniques in forecasting the Vanamide's shrimp yield. For the associative technique, backpropagation neural networks (BPN) and regression models were constructed to capture the relationship between relating production factors and past yield and the shrimp production yield. The production factors and past yield were included in the model as either 12 independent variables or 3-factor group obtained from factor analysis. Results indicated that the regression models built from the 12 production variables showed highest forecasting accuracy as well as an acceptable bias level. Independent variable reduction by factor analysis did not increase the forecasting accuracy. The accurate regression model also pointed out that the shrimp yield at 1-month before harvesting was the most influential factor affecting the harvesting yield. In addition, a comparison of the BPN, Box and Jenkins and smoothing models built from time series technique indicated that the seasonal multiplicative smoothing (SMS) model possessed the highest accuracy for both the 1-month ahead forecast and the 12-month ahead forecast. However, the 1-month ahead forecast exhibited higher accuracy than the 12-month ahead forecast. It was also observed that the SMS model constructed from the time series analysis technique had higher forecasting accuracy than the regression model constructed from the associative technique and overall exhibited an acceptable bias level. However, an overestimate could be found in April and December while an underestimate might be found in July.

Student's signature

Thesis Advisor's signature