

UNIVERSITI TEKNOLOGI MARA

**SPATIO-TEMPORAL
DISTRIBUTION PATTERN OF
MACRO SOIL NUTRIENTS IN
PADDY AREA**

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of the requirements for the degree of
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ABSTRACT

Understanding of soil nutrient level for agriculture plantation such paddy is very important to determine the higher of paddy yield. At current, several issues have arisen in plantation operation and management. Among the issues that receive the biggest concern from the management and the farmers itself, the fertiliser is not uniformly distributed for each plot in the paddy fields. Therefore, this study was conducted to understand nutrients level variation between systematic paddy cultivation (study area of FELCRA Seberang Perak) and local farmers (study area of Sedaka, Kedah). In addition, the objectives of this study are i) to determine spatial variability of soil nutrient in paddy plantations ii) to quantify the amount of fertiliser rate used in different farm's management system and, iii) to assess nutrient variability pattern between two different sampling cycles and different soil depths. In total, 49 and 52 soil sampling points were collected from the FELCRA Seberang Perak and Sedaka study sites respectively. The collected soil samples were processed using chemical analysis in determining composition of Nitrogen (N), Phosphorus (P) and Potassium (K). Further investigation of spatial variation of N, P, and K was done using Kriging interpolation. Nevertheless, the findings indicated that the FELCRA Seberang Perak of nutrient K was adequate as compared to the N, P nutrients with an insufficient amount and fertiliser ratio of 115:41:12. However, at the Sedaka site, variables of the N, P, K is less adequate with fertiliser's ratio of 114:35:72. In addition, the result of spatial variability within both areas indicated that an increase of variables N, P, K value in two sampling cycles as presented by the coefficient of variation (CV) values. Therefore, overall, both of area in a result of CV is (low and medium) variability. It is can conclude that it's no heterogeneity in the soil. Therefore, the CV information can be used as an indicator to suggest appropriate N, P, K nutrient for soil in paddy cultivation. As a conclusion, the prediction map of spatial variability of two study areas was detected through geospatial analysis and this probably due to the differences in management practices by the farmers. Thus, better fertiliser planning should be taking into consideration by plantation management to optimize applied nutrient rates for better yield and in paddy crop production.

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