

Development of real time soil nutrient mapping system in paddy field

ABSTRACT

Application of advanced sensing technology in agriculture has becoming a trend in many countries. Integration of sensors and ICT such as GIS is essential for grower to improve their field management and crop yield. Effective site specific management requires strong and temporally consistent relationship zones that have been identified, underlying soil physical, chemical and biological parameters, and crop yield. Those requirements are possible to be obtained through the use of specialized equipment and state-of-the art technology. This study was carried out to develop a real time system to provide map of soil nutrient such total nitrogen (N), available phosphorus (P) and exchangeable potassium (K) by using electrical conductivity sensor. Results from this study have proven the merit of the developed system in terms of its performance and its reliability. The soil nutrient map produced by this system was nearly identical to a kriging map produced via ArcGIS software and it reliable for use in the site specific application for best fertilizer management practices. This finding indicates that the soil nutrient variability map was possible to be produced in real-time basis without engaging any tedious work in the field. The use of this mapping system as a basis of identifying the soil nutrient variability proved to be a good technique for the farmers to better manage their paddy fields.

Keyword: Apparent soil electrical conductivity (ECa); Nitrogen (N) fertilizer; Paddy field; Variability map