

Landcover Mapping Using Lidar Data and Aerial Image and Soil Fertility Degradation Assessment for Rice Production Area in Quezon, Nueva Ecija, Philippines

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Abstract : Land-cover maps were important for many scientific, ecological and land management purposes and during the last decades, rapid decrease of soil fertility was observed to be due to land use practices such as rice cultivation. High-precision land-cover maps are not yet available in the area which is important in an economy management. To assure accurate mapping of land cover to provide information, remote sensing is a very suitable tool to carry out this task and automatic land use and cover detection. The study did not only provide high precision land cover maps but it also provides estimates of rice production area that had undergone chemical degradation due to fertility decline. Land-cover were delineated and classified into pre-defined classes to achieve proper detection features. After generation of Land-cover map, of high intensity of rice cultivation, soil fertility degradation assessment in rice production area due to fertility decline was created to assess the impact of soils used in agricultural production. Using Simple spatial analysis functions and ArcGIS, the Land-cover map of Municipality of Quezon in Nueva Ecija, Philippines was overlaid to the fertility decline maps from Land Degradation Assessment Philippines- Bureau of Soils and Water Management (LADA-Philippines-BSWM) to determine the area of rice crops that were most likely where nitrogen, phosphorus, zinc and sulfur deficiencies were induced by high dosage of urea and imbalance N:P fertilization. The result found out that 80.00 % of fallow and 99.81% of rice production area has high soil fertility decline.

Keywords : aerial image, landcover, LiDAR, soil fertility degradation

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