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Assessment of Paddy Crop Condition and Yield Using GIS and Remote Sensing

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ABSTRACT

Assessment of Paddy crop condition and yield using Geographic Information System (GIS) and Remote Sensing has become an important approach in modern agricultural research and management. These technologies help in collecting and analyzing large-scale spatial data related to crop growth, soil conditions, and environmental factors. By using satellite images and aerial data, researchers and agricultural experts can monitor the health and development of paddy crops throughout the growing season. Remote sensing techniques provide valuable information about vegetation cover, moisture levels, and crop stress through different spectral bands. Vegetation indices, such as NDVI (Normalized Difference Vegetation Index), are commonly used to evaluate crop vigor and detect areas affected by disease, pests, or water deficiency. GIS technology further helps in mapping, storing, and analyzing this spatial information to identify variations in crop conditions across different regions. The integration of GIS and remote sensing allows accurate estimation of paddy yield and supports better decision-making for farmers and agricultural planners. It helps in predicting production levels, optimizing irrigation and fertilizer use, and managing agricultural resources more efficiently. Overall, these advanced technologies contribute to improving crop productivity, reducing risks, and supporting sustainable agricultural development.