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DISORDER SEVERITY ANALYSIS OF COCONUT LEAVES THROUGH HYBRID DEEP LEARNING APPROACH

Coconut palms (*Cocos nucifera*) are highly vulnerable to foliar disorders, among which leaf yellowing is a critical early indicator of plant stress. Accurate assessment of yellowing severity can assist in timely intervention and precision management. In this work, we propose a dual-approach framework for automated severity classification of coconut leaf yellowing.

The first approach employs a deep learning model to categorize leaf images into four severity levels: Healthy, Mild, Moderate, and Severe. In parallel, a mathematical model is developed based on pixel-level color analysis of leaf regions, providing an interpretable measure of yellowing severity. The comparative performance of the two approaches will be evaluated in terms of classification accuracy and reliability.

This study aims to explore the complementary strengths of data-driven and rule-based methods, contributing toward practical and explainable solutions for monitoring coconut leaf health in agricultural applications.

Keywords
Severity classification, Deep learning, Precision agriculture, Semantic Segmentation

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