Review of: "Yield Forecasting Model for Maize Using Satellite Multispectral Imagery Driven Vegetation Indices"

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Potential competing interests: No potential competing interests to declare.

The method of using hyperspectral satellite remote sensing imagery technology for monitoring corn yields is highly innovative and promising. This article adopts two types of hyperspectral satellite remote sensing imagery technologies and combines them with corn yields from multiple locations. Through methods involving the acquisition, calibration, and analysis of satellite image data, NDVI modeling, and more, it establishes a high-precision, multi-scale, multi-platform, and multi-parcel corn yield monitoring model. This provides us with a new approach for predicting and verifying corn yields. If possible, by monitoring and diagnosing key growth indicators of corn through spectroscopy during critical growth stages (not just during harvest), it could enable manual intervention in field farming practices, thereby enhancing the stability of corn yields. Monitoring and diagnosing indicators during the growth stages of corn can provide timely information about plant health, nutrient absorption, water usage, and more. These indicators include but are not limited to vegetation indices (like NDVI), chlorophyll content, moisture indices, etc. Introducing some photosynthetic physiological indicators, such as leaf chlorophyll content during critical growth stages of corn, the leaf area index, photosynthetic performance indicators, and the light quantum intensity at different positions, can help analyze the potential correlation between corn population photosynthetic indicators and hyperspectral remote sensing imagery. For example, analyzing the relationship between the corn leaf chlorophyll content and the reflectance in corresponding bands of remote sensing imagery can infer chlorophyll content information in the imagery. Similarly, comparing photosynthetic performance indicators and spectral characteristics in remote sensing imagery helps understand the growth status and photosynthetic efficiency of the corn population. This aids in precision farming to improve corn yield and quality. Additionally, this contributes to a deeper understanding of plant photosynthetic mechanisms and physiological processes, providing crucial references for agricultural science research. Trying multiple regression models for establishing corn yield prediction models (rather than just linear models) incorporating factors such as sunlight, temperature, rainfall, and soil nutrients might result in a more accurate multi-diagnostic model. Moreover, establishing Partial Least Squares (PLS) models to analyze the path coefficients between various factors, assessing model parameters, understanding significant relationships between multifactor variables, and corn yield helps identify critical influential factors affecting corn yield.