Special Issue

Crop Yield Estimation Based on Crop Models and Remote Sensing Data

Message from the Guest Editors

Accurate and timely crop yield estimation is critical for addressing global food security, adapting to climate change, and advancing precision agriculture. The application of remote sensing technologies has significantly enhanced spatially explicit monitoring of crop growth and yield predictions across scales, from sub-field to global assessments. By integrating crop growth models with remotely sensed variables derived from multi-platform sensors, researchers can now produce actionable yield maps to support sustainable land management and policy-decisions.

Despite progress, key challenges remain: scaling field-level models to regional/national domains with diverse soils, climates, and practices; quantifying uncertainties in data assimilation from fusion methods, model structure, and inputs; balancing machine-learning accuracy with efficiency; and the development of robust frameworks to assess yield dynamics amid increasing climate extremes like droughts and floods.

This Special Issue invites original research and comprehensive reviews that address any of the above challenges through innovative theory, methodology or real-world applications.

Guest Editors

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