

# Bayesian Machine Learning Approach for Corn Yield Prediction Using Satellite Imagery and Topographic Data

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## Abstract

In an era of climate change and growing global food demand, accurate crop yield prediction is pivotal for leveraging advanced technologies to enhance crop management and sustainability. This study compares the prediction performance of several Bayesian Machine Learning method using high-resolution PlanetScope imagery and topographic data. In specific, the Bayesian Linear Regression, Bayesian Random Forest, Bayesian Splines, Bayesian Additive Regression Trees, and Bayesian Neural Network were developed to incorporate uncertainty quantification and achieve enhanced predictive accuracy. Our finding shows that the Bayesian Random Forest outperform the other model in term of crop yield prediction.

**Keywords:** Bayesian, Machine Learning, Yield Prediction, PlanetScope Imagery, Topographic Data