# **Prediction of Oil Palm Yield Using Machine Learning in the Perspective of Fluctuating Weather and Soil Moisture Conditions: Evaluation of a Generic Workflow**

* The importance of machine learning in predicting agricultural yields has been highlighted by recent developments in precision agriculture. In complex agro-meteorological data, machine learning algorithms are capable of learning both linear and nonlinear patterns. The oil palm sector does not use machine learning techniques for predictive analysis. This work examined a supervised machine learning approach to predict oil palm yield.
* There has never been a reported agricultural yield prediction framework. To create an accurate yet adaptable prediction model, auto-ML was paired with a traditional machine-learning regression approach. Additionally, using primary data, the efficacy of machine learning algorithms in predicting oil palm production from real data was assessed.
* Given the need for long-term intensification and the best use of natural resources, crop yield prediction is a crucial but fascinating topic. Confounding elements while creating a prediction model include various crop-specific traits, environmental factors, and management strategies that affect crop yield. Field surveys, crop growth models, remote sensing, statistical models, and combinations of these methods are methods for predicting agricultural yield.
* Robot-based techniques for predicting crop yields are constrained by their incapacity to register to change abiotic environmental conditions. To create accurate projections, machine learning blends the benefits of data-driven modeling with those of remote sensing and growth simulation models. Many machine learning and deep learning models have been put out for predicting agricultural yields based on the environment. However, the use of machine learning in oil palm predictive analysis is neglected.
* Pressure on the oil palm industry for damaging the environment is growing on the political, economic, and environmental fronts. Instead of establishing additional lands, the best course of action is to adopt the most recent technologies and close the yield gap between actual and potential production.
* The best course of action is integrating the most recent technologies to increase yield by closing the gap between actual and prospective yield. However, various elements, such as varying weather, may dramatically affect the results. For the forecasting of oil palm yields depending on weather, data-intensive frameworks are needed. Then, by coupling machine learning with actual data, decision-making may be supported by evidence.

<https://www.mdpi.com/2223-7747/11/13/1697/htm>

<https://code.mpimet.mpg.de/projects/cdo/embedded/cdo.pdf>

**A smart multiple spatial and temporal resolution system to support precision agriculture from satellite images: Proof of concept on Aglianico vineyard**

In the case of high-profit crops, such as wine, field monitoring can provide an opportunity to improve farmer incomes. However, any field monitoring represents an additional cost for the farmer, which slows down the objective of diffuse sustainable agriculture. The goal of sustainable development is to increase human well-being and maintain these gains over time. However, due to the effects of climate change and the rising demand for energy and resources, this goal is becoming more difficult to achieve. The obstacles to sustainable development include widespread environmental deterioration and significant adjustments and changes to the natural environment.

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