



**PROJECT REPORT**  
**CLASIFICATION OF PLANT MEDIA BASED ON NPK**  
**CONTENT USING MACHINE LEARNING**

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## ABSTRACT (ABSTRACT TITLE)

*The content of nitrogen (N), phosphorus (P), and potassium (K) in growing media is an important indicator in determining soil fertility and the success of plant cultivation. This study aims to classify types of planting media based on NPK content using a machine learning approach. Data was collected directly through soil sensors that measure the NPK content of different types of growing media. The analysis was conducted using the Orange Data Mining platform, comparing five classification algorithms: Random Forest, Support Vector Machine (SVM), k-Nearest Neighbor (k-NN), Naïve Bayes, and Neural Network. Model performance evaluation was conducted using cross-validation, random sampling, and confusion matrix methods, with metrics such as accuracy, precision, recall, F1-score, and AUC value. The experimental results show that the k-Nearest Neighbor (k-NN) algorithm provides the best performance with the highest accuracy (75%) and AUC of 0.93. These findings show that machine learning approaches are effective in detecting and classifying planting media based on NPK content, and can be used as a basis for decision-making in agriculture.*

*Keyword: Machine Learning, NPK, Growing Media, Classification, Soil Sensor.*

