

**A GARDEN PLANT RECOMMENDATION SYSTEM ON THE
SONY NURSERY WEBSITE USING THE
RANDOM FOREST METHOD**

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ABSTRACT

The selection of plant types for gardens in landscape design businesses such as Sony Nursery is generally still performed conventionally based on manual experience or memory. This process is often inefficient, time-consuming, and carries the risk of producing recommendations that do not match the environmental conditions of the land or customer preferences. This study aims to build a website-based garden plant recommendation system integrated with artificial intelligence to provide recommendations automatically, quickly, and accurately. The classification method applied is Random Forest, which is known to be reliable in handling complex variables and minimizing overfitting through an ensemble learning approach. The stages of this research include problem identification, literature study, data collection and preprocessing resulting in 877 clean data entries, machine learning modeling, model evaluation, system design, and website implementation using Laravel and Python (Flask). Based on the model evaluation results using an 80:20 train-test data split ratio, the Random Forest algorithm yielded good performance with an accuracy rate of 78%, precision of 77%, recall of 78%, and an F1-score of 76%. Functional testing using the Black Box method showed that all system features functioned properly without issues. Furthermore, User Acceptance Testing (UAT) involving 38 respondents achieved an average satisfaction rate of 96%, proving that the system is accessible.

Keywords: Recommendation System, Garden Plants, Random Forest, Machine Learning, Website