

Mitti Sathi

Your Soil, Your Guide

Abstract

Many economies rely heavily on farming, although farmers sometimes face difficulties in selecting the best crop for their land. Their inability to obtain trustworthy, data-driven insights on soil and environmental conditions is the main source of this. Particularly in regions where agriculture is essential to existence, these difficulties usually lead to low yields, resource waste, and monetary losses. We created Mitti Sathi to address the difficulties farmers encounter while choosing the best crop and projecting possible output. This intelligent system serves as a guide, providing customised suggestions for the best crop depending on environmental and soil conditions. Additionally, it offers a projection of the anticipated production for a selected crop.

We have developed two machine learning models to get these results. A Random Forest Classifier, that determines the ideal crop by analyzing the composition of the soil. And a Random Forest Regressor that predicts the yield by taking into account elements like soil nutrients, temperature, and humidity . To assure accuracy, we carefully processed the datasets, correcting outliers and scaling characteristics. The regressor produced an outstanding R2 value of 0.96, while the classifier had a test accuracy of 94.17%.

We developed a web application to make Mitti Sathi easily accessible. Farmers may access it online, where it is hosted on the Render platform using Waitress as the WSGI server, or locally using Flask. You may get the app from mitti-sathi.onrender.com .Mitti Sathi enables farmers to make well-informed decisions by fusing ancient agricultural methods with contemporary data science, opening the door to more sustainable agriculture and improved harvests.