Deep Learning-Based Soil Nutrient Content Prediction for Crop Yield Estimation

Sharma, Iti; Kumar, Nimish; Verma, Himanshu (2024.0)

ABSTRACT ORIGINAL

This chapter proposes a deep learning-based approach for predicting soil nutrient content and its impact on crop yield. The objective is to develop an accurate model that can assist farmers in making informed decisions about nutrient management and improving crop productivity. The proposed approach employs a combination of a convolutional neural network (CNN) architecture and long short-term memory (LSTM) networks for analyzing soil samples and forecasting nutrient content. Subsequently, the trained model is harnessed to assess the influence of soil nutrient content on crop yield, taking into account factors like climate, water availability, and soil type. The approach was tested on publicly available soil nutrient and crop yield datasets of soil samples collected from different regions and crops. The findings illustrate that the suggested model surpasses conventional approaches and attains remarkable precision in forecasting soil nutrient levels and crop yield.