

## ABSTRACT

Organic farming is an agricultural approach that prioritizes sustainability, biodiversity, and environmental protection. In contrast to conventional farming, organic farming is a natural process that avoids the use of synthetic chemicals and genetically modified organisms. This gives an overview of the principles and practices of organic farming, highlighting its benefits for soil health, water conservation, and biodiversity. The focus on crop rotation, cover cropping, and composting in organic systems promotes soil fertility and robustness. TechHarvest: Growing Smarter with Digital Era for Agriculture is an initiative that is developed to estimate crop yield, analyse agricultural data, optimize farming practices, and ensure accurate predictions. It is a sophisticated application that provides precise estimation of crop yields. It also analyses agricultural data and gives accurate predictions. It provides an optimal farming solution according to the agricultural inputs.

Artificial Intelligence is practiced towards monitoring the crops, soil, weather conditions and other inputs. Machine Learning that is categorized as two types supervised and unsupervised learning is also integrated with Algorithm Intelligence to detect obstacles and for management purposes. The two Machine Learning algorithms used are: Linear Regression algorithm for crop and yield prediction and Linear Discriminant analysis for classification tasks. Regression algorithm is commonly used to model relationship between different variables and makes predictions. Linear Discriminant Analysis is a statistical method used for classification like crop classification, weed identification and disease detection. The application suggests optimal organic solution based on the inputs stated by the farmer. This application provides an optimal organic solution using the stated algorithms which is an advantage when compared to others. Organic farming helps to overcome all the hindrances and promotes sustainable development.