This research paper introduces a Crop Recommendation System designed to assist farmers in selecting the most suitable crops for their land based on specific environmental factors. The study focuses on addressing the challenges faced in Sri Lanka, where despite having manual agricultural knowledge, there is a lack of automated systems to detect environmental factors and suggest optimal crops for cultivation.

The proposed system integrates various technologies, including Arduino microcontrollers for environmental data collection, machine learning techniques such as Naïve Bayes and Support Vector Machine, Unsupervised machine learning algorithms like K-Means Clustering, and Natural Language Processing through Artificial Intelligence. These technologies work together to predict the best crop for a given area by analysing site-specific parameters with high accuracy and efficiency.

The motivation for this research stems from the uncertainties in environmental factors, such as temperature, water levels, and soil conditions, which change over time. The Crop Recommendation System aims to overcome these challenges and provide farmers with informed decisions on crop selection, considering factors critical for plant growth.

The literature survey emphasizes the need for precision agriculture and the challenges it faces. The authors highlight the importance of site-specific methods to enhance precision in agriculture. The proposed system leverages advancements in technology, including sensors and IoT devices, to collect data continuously and process it through sophisticated algorithms for improved decision-making.

In environments with limited agricultural knowledge and space, the Crop Recommendation System proves effective in guiding farmers from planting to harvesting. The automatic processing of environmental factors eliminates the need for specialist guidance and minimizes maintenance costs. With an accuracy exceeding 95%, the system is deemed suitable for both rural and urban areas in Sri Lanka.

The paper suggests future enhancements, including incorporating automation in response to farmer feedback and developing algorithms to predict one environmental factor using others. These improvements aim to further optimize the system's functionality, making it even more responsive and cost-effective for farmers