Plant Disease Detection

Plant disease detection has played a significant role in combating plant diseases that pose a threat to global agriculture and food security. Detecting these diseases early can help mitigate their impact and ensure healthy crop yields. Machine learning algorithms have emerged as powerful tools for accurately identifying and classifying a wide range of plant diseases from trained image datasets of affected crops. These algorithms, including deep learning algorithms, have shown remarkable success in recognizing disease patterns and early signs of plant diseases. Besides early detection, there are other potential benefits of machine learning algorithms in overall plant management system, such as soil and climatic condition predictions for plants, pest identification, proximity detection, and many more. Over the years, research has focused on using machine-learning algorithms for plant disease detection. Nevertheless, little is known about the extent to which the research community has explored machine learning algorithms to cover other significant areas of plant disease management.

I will give to explain with real time data. we propose opportunities for developing machine learning-based technologies to cover prevention, diagnosis, control, monitoring, and recovery.

Plant Disease Detection involves identifying signs of disease in plants using visual symptoms (such as leaf spots, wilting, or discoloration) or through advanced methods like machine learning, computer vision, and spectroscopy. Uses image processing to analyse leaf images.

Example : Common Cotton Diseases:

<u>Leaf Spots</u>

Cause: Fungal diseases (e.g., Alternaria, Cercospora)

Symptoms: Brown or black circular lesions, often with yellow halos.