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(57) Abstract :

The present invention relates to the development of an AI-powered approach for detecting plant leaf diseases and adaptive fertilizer recommendations for sustainable farming practices. The approach includes the use of sophisticated imaging technologies, machine learning techniques, and agricultural analytics to detect plant leaf diseases in their early stages and suggest adaptive fertilization solutions. Images are acquired by using advanced imaging devices, either mobile phones, drones, or soil sensors in the fields, and they are classified using a deep learning technique that detects disease symptoms with high precision. At the same time, soil properties, growth characteristics of plants, weather information, and nutrient requirements are analyzed using AI-powered forecasting systems, which provide crop-specific fertilization needs. Finally, the system produces an adaptive fertilizer plan that will contribute to better crop growth while avoiding excessive chemicals. FIG.1

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