Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 03, Issue: 01 (JAN-FEB, 2023)
Available online at http://www.agriarticles.com
©Agri Articles, ISSN: 2582-9882

Artificial Intelligence for Plant Disease Detection, Diagnosis, Monitoring and the Management

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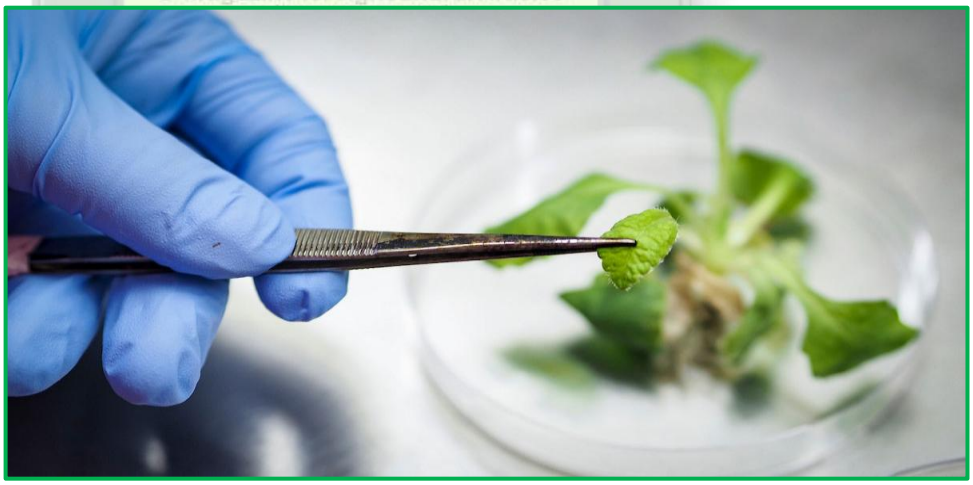
Artificial intelligence (AI) has a huge impact in all industrial sectors. Latterly, AI has been improving at an excellent speed. AI is proficient in solving various problems and preserving a profitable resource by minimizing environmental degradation. AI is making an innovation in agriculture by replacing traditional methods by applying methods that are more capable and helping the world to become a better place. Intervening of AI in agriculture is serving farmers to recover their farming efficiency and diminish environmental hostile influences. Disease infection is the major drawback of agriculture. Due to this drawback, the quality and quantity of agriculture products are degraded. To identify and detect the disease on agriculture product, the AI technique is introduced.

Artificial Intelligence

AI is the study associated with computer sciences that particularly emphasize the development of intelligence machines simulate human like thinking and working traits. The word "Artificial Intelligence" was coined by Prof John McCarthy, USA in 1955. AI strives to achieve human-like performance in all cognitive tasks using purely logical reasoning. The tasks like speech recognition, problem-solving, learning and planning are good examples. In short, AI is intelligence demonstrated by machines. Major sub-areas of AI are image analysis, machine learning, deep learning, expert systems, and robotics etc. (Nawaz et al., 2020). The core part of AI is Machine Learning (ML). The sole purpose of machine learning is to feed the machine with data from past experiences and statistical data so that it can perform its assigned task to solve a particular problem.

Plant Disease Detection and Diagnosis

Plant disease diagnosis has been traditionally been done by visual observation which is always a time-consuming and expensive process so artificial intelligence is coming up in a way for helping farmers to solve detection and diagnostic issue of plant diseases.



Monitoring, Forecasting and Management of Plant Diseases

Monitoring plant health is essential to reduce disease spread and facilitate effective forecasting and management practices. As a result, numbers of tech companies are investing in algorithms that are being used for monitoring and forecasting diseases using various field scouting and meteorological data in agriculture. Such predictions would warn the growers via email or text messages or initiate spraying of chemicals by automated robots.

Conclusion

AI has two sides, one logical and other human aspect which augments the jobs of growers instead of replacing them. It helps save time and reduces the burden of famers of scouting and walking through field to check crops for various anomalies. The Al/machine learning-based approaches, which will be used for detecting and classifying the diseases on agricultural products including various plants, fruits and vegetables. Expert systems are considered one of the most successful methods used to help and support users in making right decisions: were they lack knowledge in diagnosing plant diseases. The agricultural robot developed is capable of detecting the disease, monitoring the field condition by moving around the field as well as spray the chemical for management of plant diseases. Al-based mobile phone app could provide an effective, low-cost and easy.