AI Based Crop Monitoring System

BY

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INTRODUCTION

- Artificial Intelligence is a branch of computer science dealing with the simulation of intelligent behavior in computers.

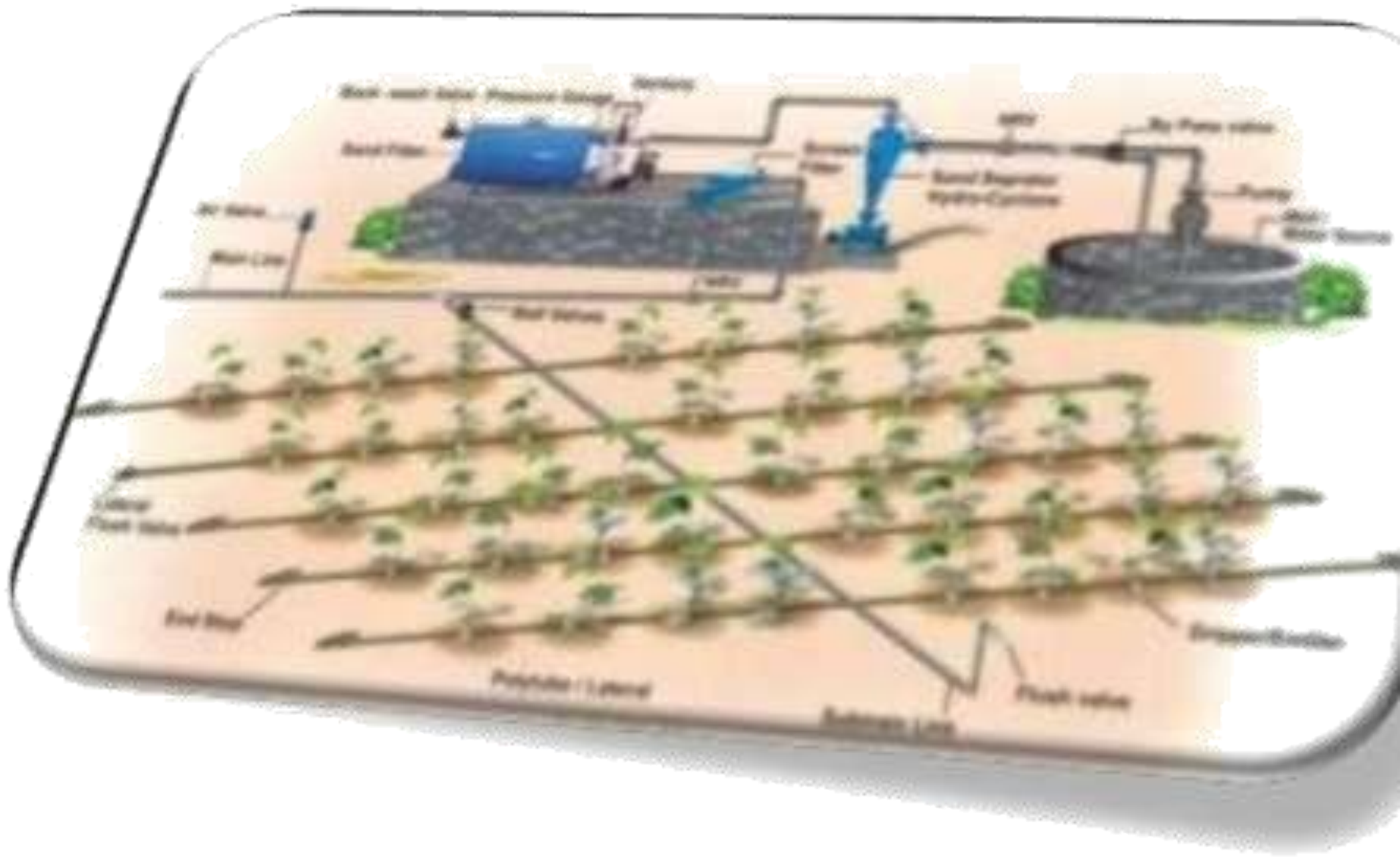
- "Artificial Intelligence is not a Man versus Machine saga; it's in fact, Man with Machine synergy."

GREEN REVOLUTION

- The global population is expected to reach 10 billion people by 2050, which means double agricultural production in order to meet food demands which is about 70% increase in food production.
- Farm enterprises require new and innovative technologies to face and overcome these challenges.
- By using A I we can resolve these challenges.

How A I is used in agriculture:

- Automated farming activities.
- Identification of pest and disease outbreak before occurrence.
- Managing crop quality.
- Monitoring biotic.
- Abiotic factors and stress.
- Machine vision systems and phenotype lead to adjustments.

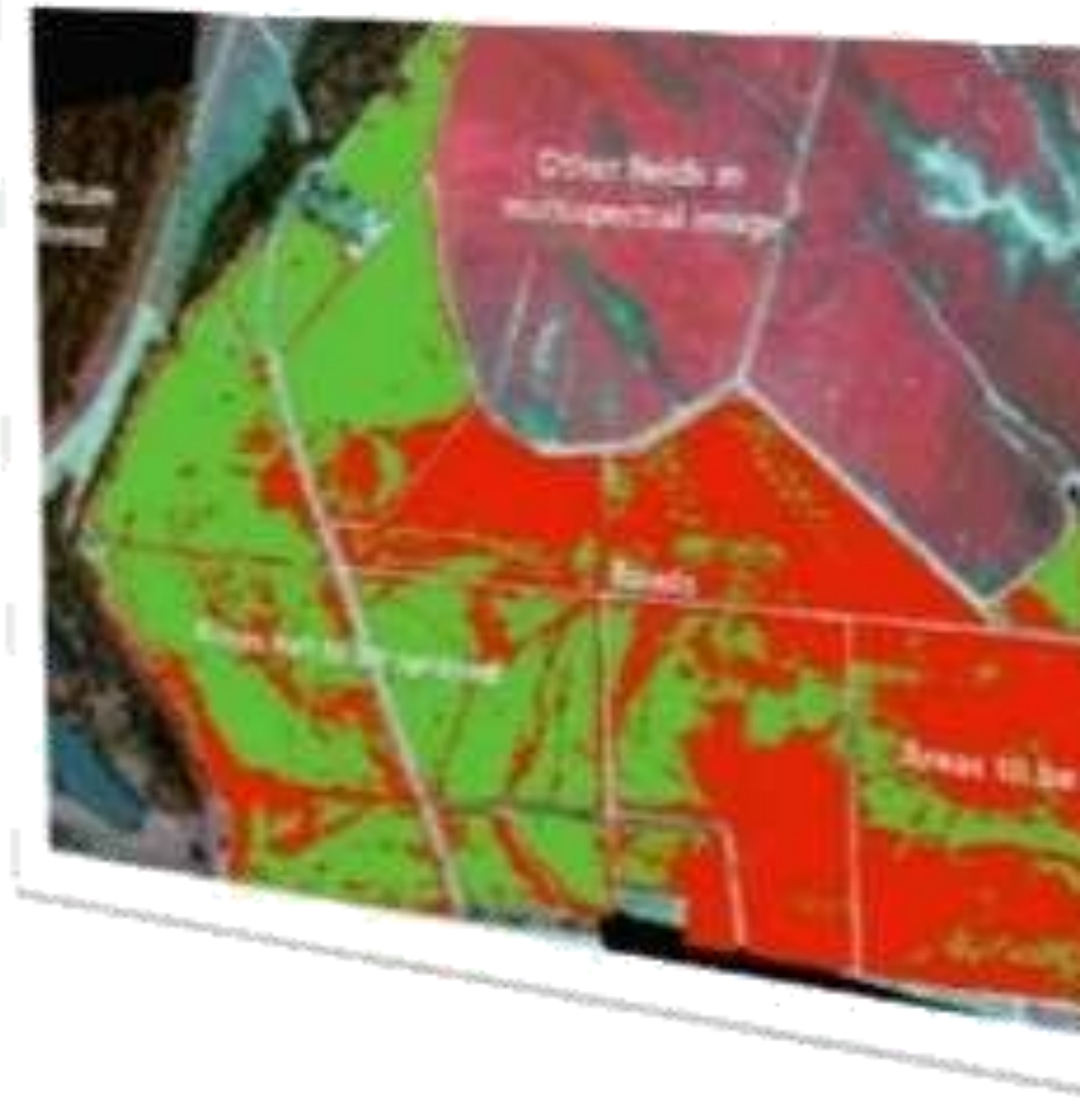


AUTOMATED IRRIGATION SYSTEM:

- EFFECT OF USAGE:
- Reducing production costs of vegetables, making the industry more competitive and sustainable.
- Maintaining (or increasing) average vegetable yields
- Minimizing environmental impacts caused by excess applied water and subsequent agrichemical leaching.
- Maintaining a desired soil water range in the root zon that is optimal for plant growth.
- Low labor input for irrigation process maintenance
- Substantial water saving compared to irrigation management based on average historical weather conditions.

AI-Remote Sensing: Crop Health Monitoring:

- Hyperspectral imaging and 3D Laser Scanning, are capable of rapidly providing enhanced information and plant metrics across thousands of acres with the spatial resolution to delineate individual plots and/or plants and the temporal advantage of tracking changes throughout the growing cycle.



- Conventional methods are often time consuming and generally categorical in contrast to what can b analyzed through automated digital detection and analysis technologies categorized as remote sensing tools.
- The trained use of hyperspectral imaging, spectroscopy and/or 3D mapping allows for the substantial increase in the number of scalable physical observables in the field .
- In effect, the multi sensor collection approach creates a virtual world of phenotype data in which all the crop observables become mathematical values.

AI FOR HARVESTING VINE CROPS:

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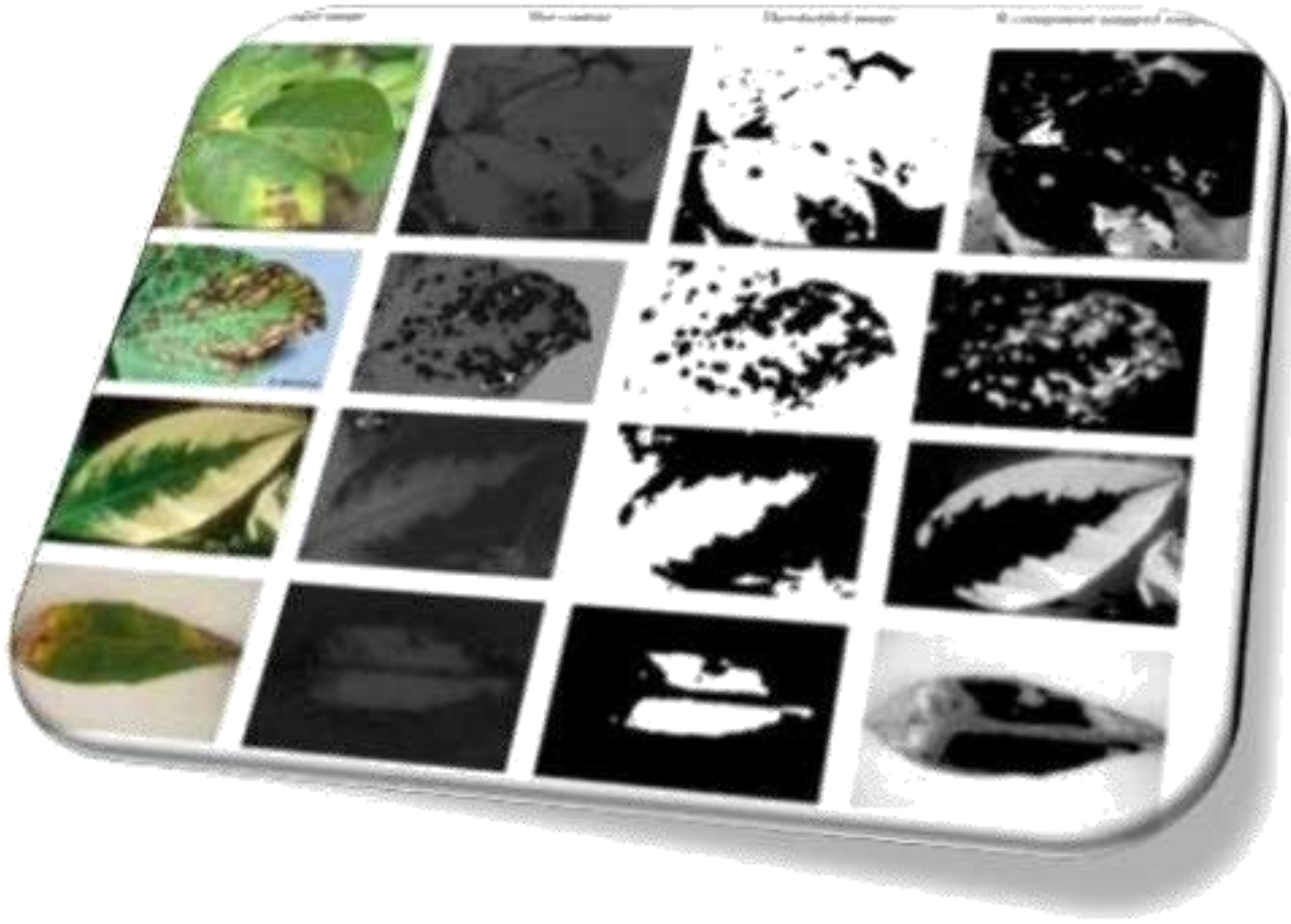
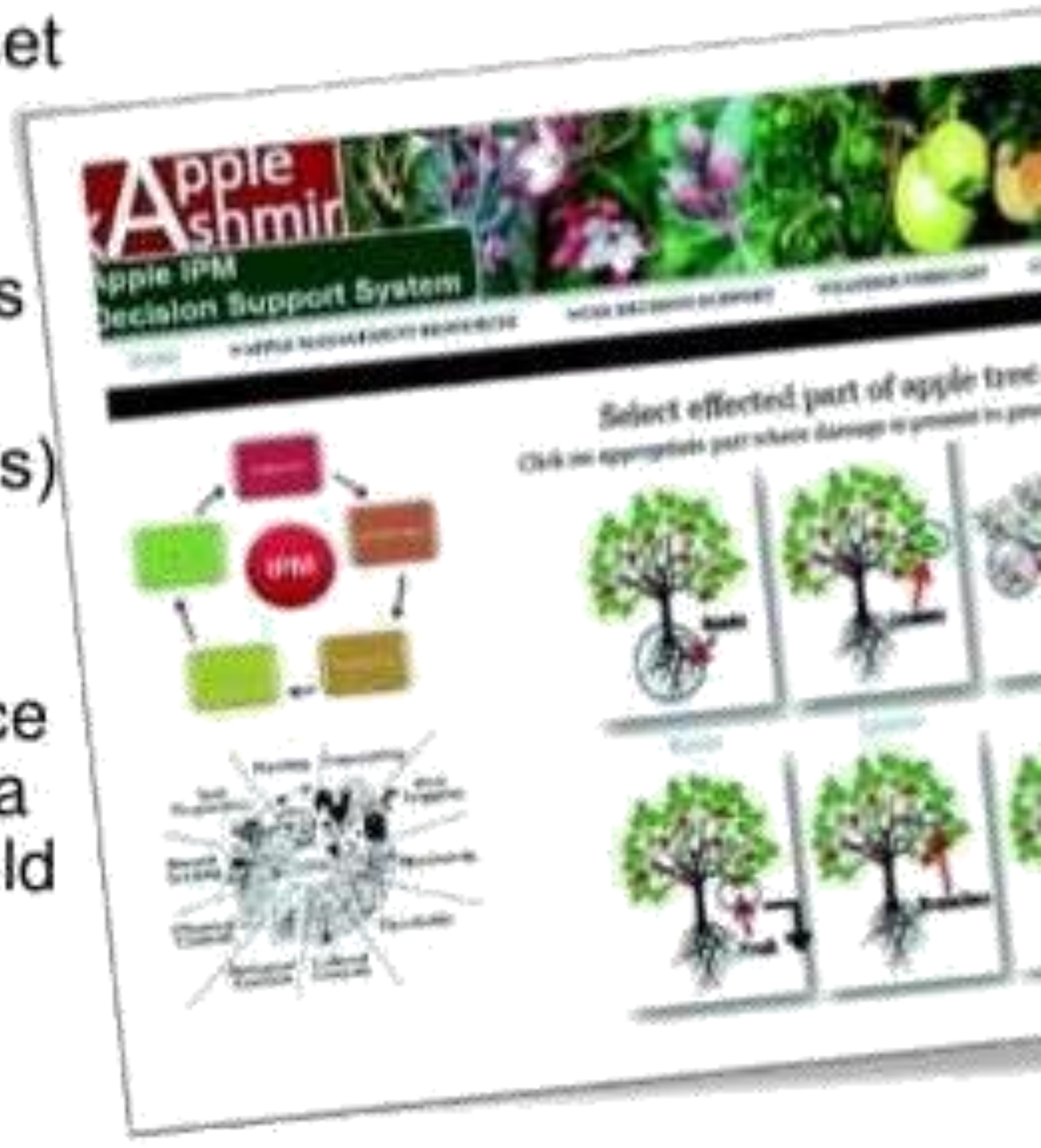
AI FOR AUTONOMOUS EARLY WARNING SYSTEM FOR ORIENTAL FRUIT FLY (BACTROCERA DORSALIS) OUTBREAKS

- This autonomous early warning system, built upo the basis of wireless sensor networks and GSM networks effectively captures long-term and up-to the-minute natural environmental fluctuations in fr farms.
- In addition, two machine learning techniques, se organizing maps and support vector machines, ar incorporated to perform adaptive learning and automatically issue a warning message to farmers and government officials via GSM networks



Decision Support System (DSS) for Field Prediction using AI Techniques

- • This system involves a set of Artificial Intelligence based techniques:
- • Artificial Neural Networks (ANNs)
- • Genetic Algorithms (GAs) • Grey System Theory (GST). •
- Use of artificial intelligence based methods can offer a promising approach to yield prediction and compared favorably with traditional methods.



AI -DRIVER LESS TRACTOR

- Using ever-more sophisticated software coupled with off-the-shelf technology including sensors, radar, and GPS, the system allows an operator working a combine to set the course of a driverless tractor pulling a grain cart, position the car to receive the grain from the combine, and then send the fully loaded cart to be unloaded.

AI FOR WEEDING

- • The Hortibot is about 3-foot-by-3-foot, is self-propelled, and uses globa positioning system (GPS). It can recognize 25 different kinds of weeds and eliminate them by using its weed removing attachments

- • HortiBotis eco-friendly, because it sprays exactly above the weeds
- • As the machine is light --between 200 and 300 kilograms --so it will not hurt the soil behind it.
- • It is also cheaper than the tools currently used for weed-elimination as it can work during extended periods of time.

CONCLUSION

- AI can be appropriate and efficacious in agricultu sector as it optimises the resource use and efficiency.
- It solves the scarcity of resources and labour to a large extent. Adoption of AI is quite useful in agriculture.
- Artificial intelligence can be technological revoluti and boom in agriculture to feed the increasing human population of world.
- Artificial intelligence will complement and challeng to make right decision by farmers.

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