



Precision Farming

A presentation by Wisdom Konwuruk



SCOPE OF PRESENTATION

Introduction
of Precision
Agriculture.

Objectives of
PA

Components
of PA

Tools used in
PA

Advantages of
PA

Importance of
PA

INTRODUCTION OF PRECISION AGRICULTURE (PA)

- Is a crop and livestock production management system that uses a Global Positioning System to monitor equipment field position to collect information and apply inputs as required at each position.
- Focuses on science of improving crop yields and assisting management decisions using high technology sensor and analysis tools.
- employs data from multiple sources to improve crop yields and increase the cost-effectiveness of crop management strategies including fertilizer inputs, irrigation management, pesticide application and land preparation.
- PA ensures;
- Effective management of fertilizers
- Efficient irrigation systems
- High productivity
- Less labour time

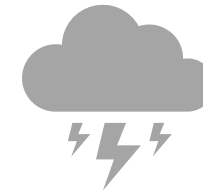
OBJECTIVES OF PRECISION AGRICULTURE



Automatically measure the performance of the site by capturing relevant data.



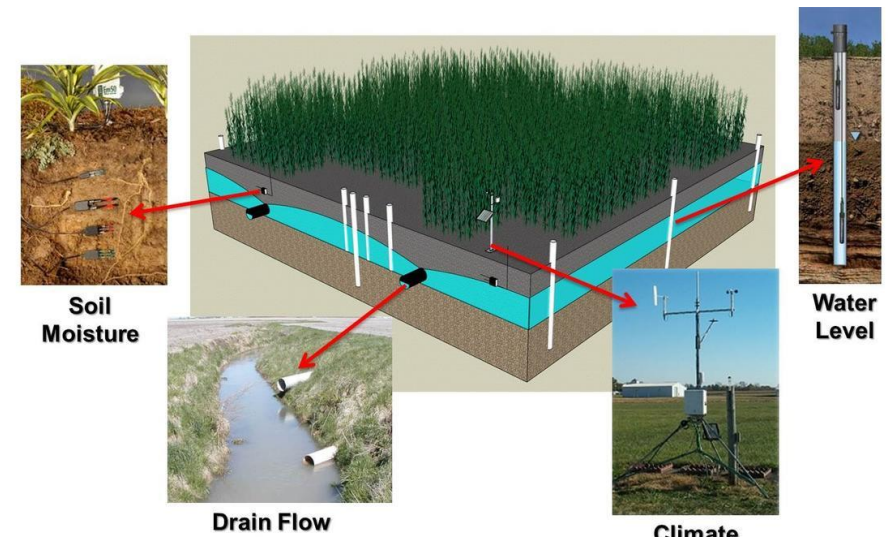
Increasing the farm's economic and environmental sustainability



Predicting climate condition changes and reacting to them proactively.

COMPONENTS OF PRECISION AGRICULTURE

- **Crop Characteristics** : stage of crop, crop health, nutrient requirement etc.
- **Micro-climate data** (seasonal & daily): crop canopy temperature, wind direction, humidity, etc.
- **Detailed Soil layer** : physical and chemical properties, nutrient status, salinity and toxicity, soil temperature.
- Surface and sub-surface drainage conditions
- Farm machinery and other equipment with sensors.
- Irrigation facilities



TOOLS OF PRECISION FARMING



AUTO GUIDANCE EQUIPMENT: ALLOWS FARMERS TO COVER A VAST FIELD ACCURATELY AND FASTER. FERTILIZER, INSECTICIDE, PESTICIDE AND CROP PROTECTION PRODUCTS ARE APPLIED AT THE REQUIRED AMOUNT AND TIME.



VARIABLE-RATE TECHNOLOGY: ALLOWS FARMERS TO CONTROL THE NUMBER OF INPUTS APPLICABLE WITHIN DEFINED AREAS. USES SPECIALIZED SOFTWARE'S, CONTROLLERS AND DGPS.



INTERNET OF THINGS: IOT ALLOWS FOR REAL-TIME MONITORING TO COLLECT VALUABLE DATA THAT CAN HAVE A SIGNIFICANT IMPACT ON OPERATIONAL EFFICIENCY.



PROXIMATE SENSORS TECHNOLOGY: THESE SENSORS CAN HELP THE FARMER TO DETECT ANY TYPE OF PROBLEM EXPERIENCED BY CROPS OR THE STRESS LIVESTOCK MIGHT BE UNDERGOING.



GLOBAL POSITIONING SYSTEM: ALLOWS FOR THE LOCATION OF FIELD EQUIPMENT THAT IS WITHIN A METER OF THE ACTUAL SITE IN THE FARM.

Cont.

Geographical Information Systems: improves agricultural operations and productivity by using computer-equipped seeders and sprinklers in devoid of overlaps.

Remote Sensors: mainly indicate variations in the field colour which corresponds with changes in soil structure and type, crop growth, animal condition and field boundaries.

CROP Production Forecast: mainly includes identification of crops, acreages estimation and yield forecasting.

Water Stress: SAR (Synthetic Aperture Radar) sensors are sensitive to soil moisture.

Precision Irrigation Systems: an innovative method that uses water efficiently.

Remote sensing technology

Satellite Imagery



Observing imagery to monitor level of damage/functionality of services, etc.

Social Listening



Helps understand the voices of the citizens on the ground

Drone Technology



Aerially assess damage, transport supplies & establish mobile phone connections

Social Crowdsourcing



Facilitates human to human contact & engagement with local population on reconstruction efforts

IoT Sensors



Devices connected to the internet that show how infrastructure is working in real time

Source: Mark Polyak, Ipsos





ADVANTAGES OF PRECISION AGRICULTURE

- Increases Return-On-Investment (ROI) by reducing inputs use whilst maximising yields.
- It reduces soil, water and air pollution by decreasing the use of chemical fertilizers and pesticides.
- PA builds up soil biodiversity and supports wildlife outside farms.
- It makes farming sustainable by reducing reliance on resources and water.
- Reduces carbon emissions from the agriculture sector.

IMPORTANCE OF PRECISION AGRICULTURE



INCREASES
PRODUCTIVITY



ACCESS TO FARM
RECORDS.



BETTER CROP
PROTECTION.



IMPROVES DECISION
MAKING EFFICIENCY.



EFFICIENT USE OF
WATER RESOURCES



REDUCTION OF
CHEMICAL
APPLICATIONS IN
CROPS.



PREVENTS SOIL
DEGRADATION

Thank you

