SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

DEPARTMENT OF AGRICULURAL ENGINEERING

23AGT101 – INTRODUCTION TO AGRICULTURAL ENGINEERING

I YEAR- II SEMESTER

PRECISION FARMING

Precision Agriculture

Remote Sensing

Crop Yield

Winds

Soil

INTRODUCTION

- Agriculture is the backbone of our country.
- Precision farming provides a new solution using a systems approach for today's agricultural issues such as the need to balance productivity with environmental concerns.
- It is based on advanced information technology.
- It aims to increase economic returns, reduce the energy input and the environmental impacts of agricultures.

(Ashish Mishra *et al.*, 2003)

DEFINITION

- Precision farming is generally defined as information and technology based farm management system to identify analysis and manage variability within fields for optimum profitability, sustainability and protection of the land resource.

(Subrata kr.Mandal and Atanu maity.2013)

Objectives of Precision Agriculture

1. To Identify the causes of within field variation in crop performance.
2. To increase production efficiency
3. To improve product quality
4. To use chemicals more efficiently
5. To protect soil and ground water
6. To determine the potential economic and environmental benefits.

Why precision farming?

- Prevents soil degradation in cultivable land.
- Reduction of chemical use in crop production.
- Efficient use of water resource.
- Dissemination of modern farm practices to improve quality, quantity & reduced cost of production in agricultural crops.

TOOLS FOR PRECISION FARMING

- REMOTE SENSING
- GEOGRAPHICAL INFORMATION SYATEM
- GLOBAL POSITIONING SYSTEM
- VARIABLE RATE APPLICATION
- LASER LAND LEVELLING
- GRID BASED SOIL SAMPLING
- LEAF COLOUR CHART
- CHLOROPHYLL METER
- SITE SPECIFIC NUTRIENT MANAGEMENT

(Anamika nath and prerna baraily, 2003)

Geographic Information Systems (GIS)

Computer software that stores, analyzes and displays spatial data and its corresponding attributes

- Attributes include: soil type, pH, salinity levels, nutrient levels, and crop history
- GIS can overlay multiple data maps
- GIS can store, calculate, model current and historical data
- Maps are the main visual output but can include reports, tables and charts

GIS Example

Data layer of yield

Data layer of topography from a Digital Elevation Model (DEM)

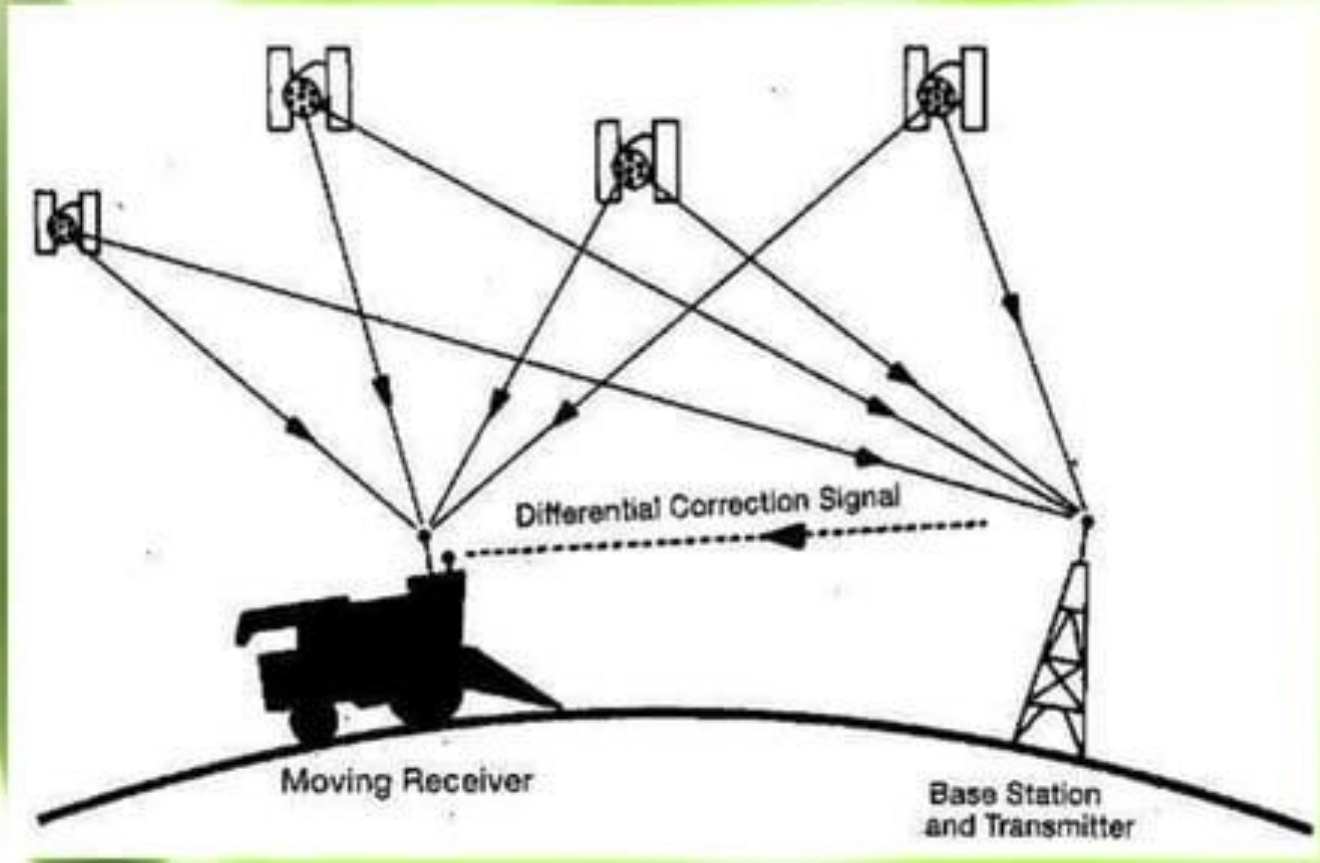
Data layer of soil conductivity

Output: A visual display of areas of low yield and high EC, indicating possible salinity problems OR fertility differences

GIS can be used to predict fertilizer needs across a field

Global Positioning Systems (GPS)

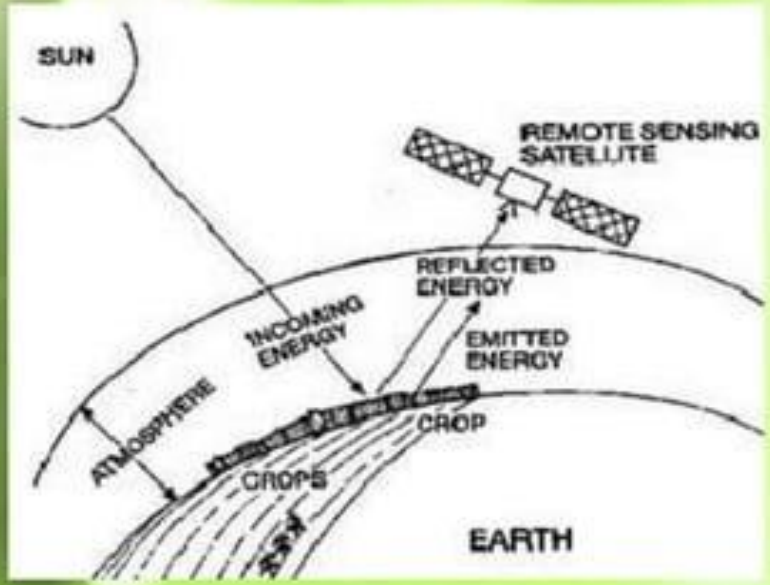
An instrument that receives satellite signals to calculate your position (latitude, longitude and elevation).



(Anamika nath and prerna baraily, 2003)

Remote Sensing (RS)

Collects data from reflected electromagnetic energy and converts it into images using satellites or airplanes.



Any data that is suspect or highly irregular, needs to be confirmed by field investigation.

(philip R. mcloud and Gronwald,2011)

Thank you