

### **What is precision agriculture?**

Precision agriculture can be defined as "the application of modern technologies to improving crop yields and assisting management"

### **Comparison between conventional and precision agriculture**

operation	Tools and equipment	
	Conventional agriculture	Precision agriculture
Land development and leveling	Bullock or tractor operated	Laser guided precision land leveler
Irrigation	Centrifugal pump, surface	Sprinkler and drip irrigation system.
Plant protection	Manual or engine operated sprayer	Air assisted spraying
harvesting	sickler	Different modern machine to harvesting

### **Objective of precision agriculture**

- ❖ Reduce waste.
- ❖ Increase profit.
- ❖ Maintain environment.

### **Precision farming includes:**

- ◆ Land preparation
- ◆ Inputs (seed, planting material)
- ◆ Irrigation
- ◆ Plant protection
- ◆ Harvesting
- ◆ Storage
- ◆ Transportation

## **Benefits of Precision Agriculture**

- 1- Increased Crop Yields:** By optimizing planting, irrigation, and fertilization based on specific field conditions, precision agriculture can lead to higher crop yields. This increased productivity is crucial for feeding a growing global population.
- 2- Resource Efficiency:** Precision agriculture minimizes resource wastage. Farmers can reduce the overuse of water, fertilizer, and pesticides, which not only saves costs but also reduces the environmental impact.
- 3- Cost Reduction:** While precision agriculture may require an initial investment in technology, it can ultimately lead to cost savings through better resource management and reduced manual labor.
- 4- Environmental Sustainability:** Precision agriculture practices result in less pollution, reduced soil erosion.
- 5- Improved Quality Control:** The ability to monitor crop health and growth in real-time allows farmers to identify issues early and take corrective actions. This can lead to improved crop quality.

## **Precision Agriculture Tools and Technologies:**

1. Global Positioning System (GPS).
2. Grid soil sampling.
3. Variable-rate technology (VRT) application.
  - ❖ Variable Rate Irrigation
  - ❖ Variable Rate Pesticide
  - ❖ Variable Rate Fertilizer
  - ❖ Variable Rate Seeding/Planting
4. Yield Monitors for Precision Agriculture.
5. Geographic Information System (GIS).