

# SUBJECT: Land Based Studies

## UNIT: Unit 203 Role of technology in Land Management



### 1. Technology in Land Management

Application	Description	Benefits
GIS & GPS Mapping	Precision planning of field activities	Efficient land use, reduced waste
Drones	Survey land, spot problem areas	Faster inspections, less labour
Soil Monitoring	Sensors for moisture, nutrients	Informed fertiliser and irrigation use
Smart Irrigation	Automated water delivery systems	Water conservation, cost saving

### 2. Technology in Land Production

Application	Description	Benefits
Automated Machinery	GPS-guided tractors, robotic seeders	Increased productivity, reduced error
Crop Monitoring Apps	Mobile tools to track growth & issues	Early problem detection
Controlled Environment Agriculture (CEA)	Hydroponics, vertical farming	Year-round production, higher yield
Data Analytics	Analysis of crop data	Better decision making

### 3. Technology in Animal Health and Welfare

Application	Description	Benefits
RFID Tags	Animal ID & health tracking	Disease traceability, record-keeping
Automated Feeders	Timed and portioned feed delivery	Consistent nutrition, less labour
Smart Collars / Wearables	Track activity and health data	Early illness detection
Robotic Milking	Voluntary cow milking stations	Reduced stress, more data per animal

### 4. Technology in Environmental Industries

Application	Description	Benefits
Renewable Energy Systems	Wind turbines, solar panels on farms	Reduced carbon footprint
Waste Management Systems	Manure digesters, composters	Recycled waste, energy production
Biodiversity Monitoring	Sensors and software to track wildlife	Conservation efforts, land-use planning
Pollution Control Tech	Water testing kits, air monitors	Prevent contamination, meet regulations

### Impact of Technology

Area	Positive Impacts	Challenges
Productivity	Increased yields and efficiency	High initial costs
Environment	Sustainable practices, less waste	Need for training
Animal Welfare	Better monitoring and care	Reliability of tech
Employment	New tech-based jobs	Job losses in manual roles