smart 4 food

innovative microlearning for farmers

01

Digital Tools for Smart Farming



Funded by the European Union

www.smart4food.eu



Module Information

Module number: 01

Module title: Digital Tools for Smart Farming

Estimated completion time for learners: 60–90 minutes

Learning Objective

Learners will be able to understand the value of digital tools in small-scale farming and use selected mobile applications, online platforms, and basic ICT tools to improve daily agricultural activities, decision-making, and data management, while ensuring safe and responsible use of digital technologies.

Agenda

Unit 1: Digital agriculture & smart farming tools

Unit 2: Digital record-keeping for farm management

Unit 3: Remote sensing & geospatial analysis (NDVI)

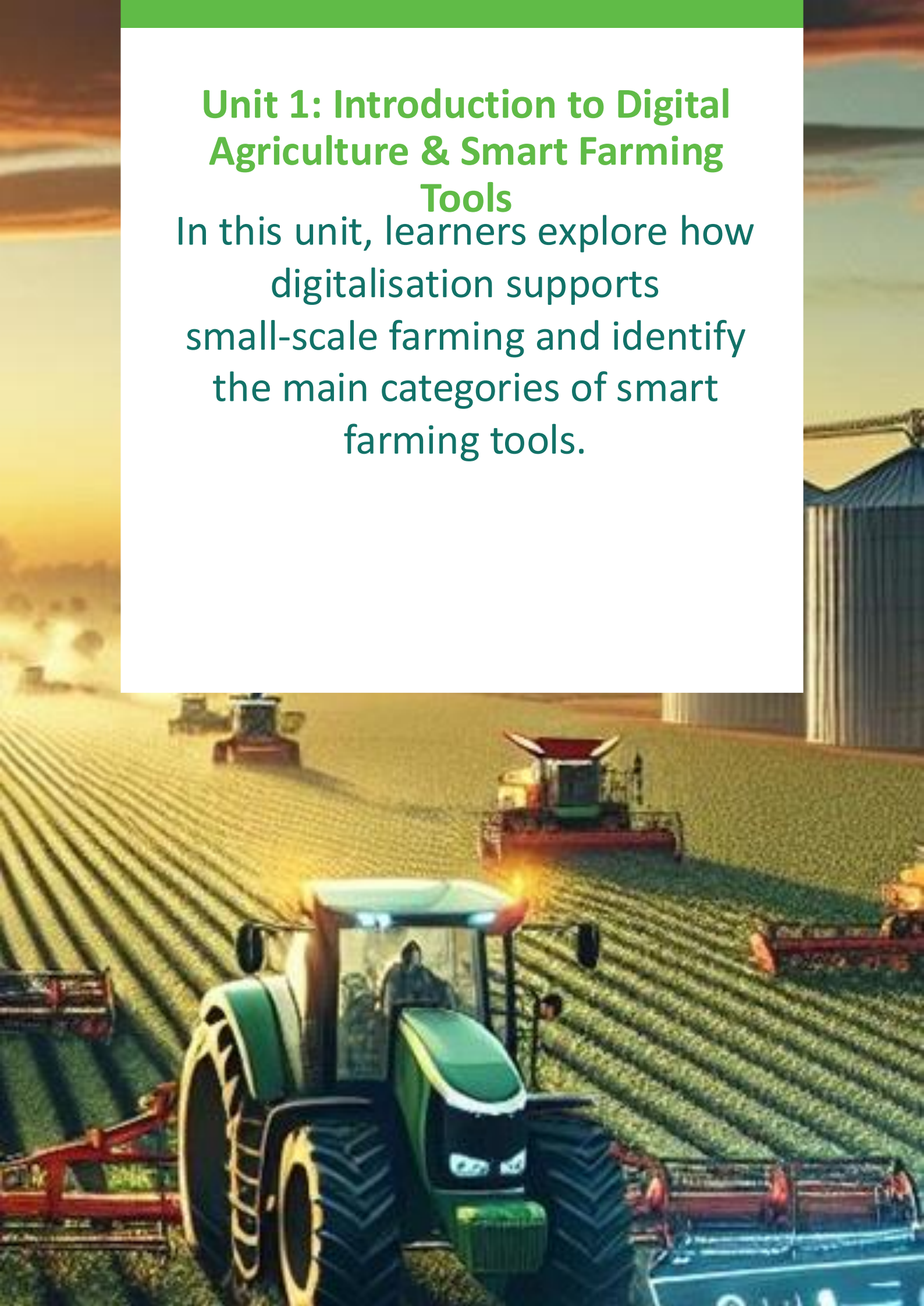
Unit 4: IoT sensors & smart irrigation

Unit 5: Artificial intelligence & data analytics

Unit 6: Data ethics, cybersecurity & sustainability

Unit 1: Introduction to Digital Agriculture & Smart Farming Tools

In this unit, learners explore how digitalisation supports small-scale farming and identify the main categories of smart farming tools.



Unit 1: Introduction to Digital Agriculture & Smart Farming Tools

Introduction

What digitalisation means for agriculture

Digitalisation helps farmers identify, describe and apply information that improves daily decisions.

It reduces information gaps and supports smarter, faster actions.

Farmers can use digital tools to:

- Access real-time weather updates
- Monitor crop and soil conditions
- Track yields and farm activities
- Analyse market trends and risks

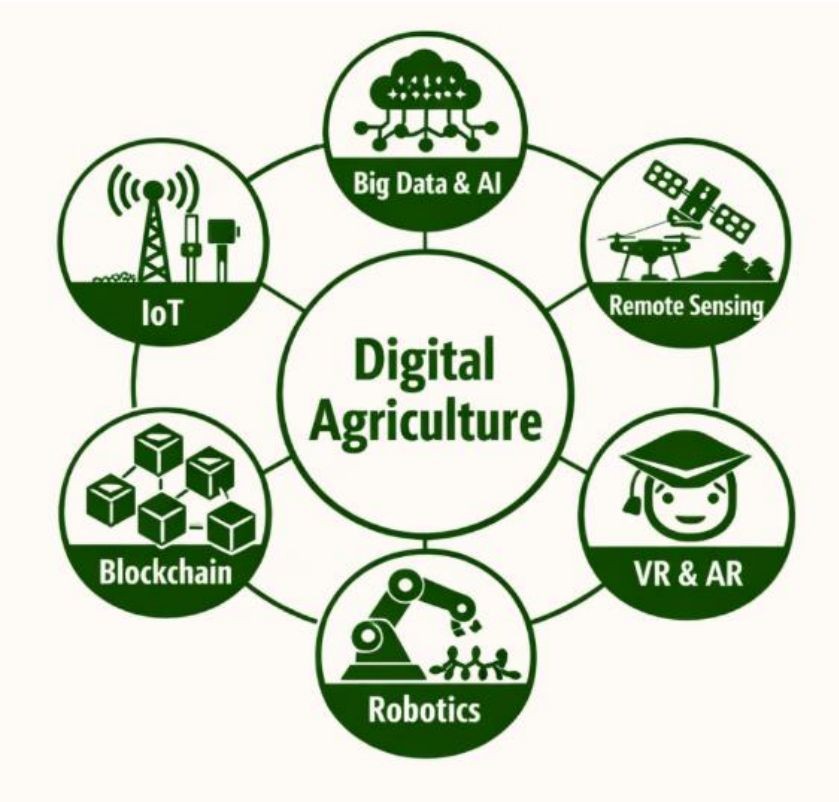
Evidence shows that digital tools lower transaction costs and reduce information asymmetry, helping farmers adopt climate-smart practices and connect to markets more easily.



This Photo by Unknown Author is licensed under CC BY

Unit 1: Introduction to Digital Agriculture & Smart Farming Tools

Main categories of digital solutions



Farmers can identify and explain different types of digital tools:

- **Internet of Things (IoT)** — sensors that collect data on soil moisture, temperature or livestock health. They help farmers adjust practices quickly. “Networked sensors and devices that collect data on soil moisture, temperature, livestock health and more.”
- **Big Data & Artificial Intelligence (AI)** — large datasets and algorithms that analyse weather patterns, prices and pest risks.
- **Remote sensing** — satellite images and drones that monitor vegetation and soil conditions.
- **Blockchain & traceability** — systems that verify transactions and trace product origin.
- **Robotics & automation** — machines that perform repetitive tasks such as weeding or sampling.
- **Augmented/virtual reality** — tools that simulate real situations for training and planning.

Unit 1 – Adoption context



Farmers' ability to use, access and benefit from digital tools depends on:

- **Digital literacy** — ability to use devices, apps and online services. "Farmers' ability to use devices, apps and online services."
- **Digital access** — availability of hardware and connectivity.
- **Decent internet** — reliable and fast connection that supports digital tools.

Understanding these factors helps practitioners adapt tools to local needs.

Funded by the European Union

UNIT 1 – REFLECTION ACTIVITY

List two digital tools you've heard of and explain how they might help a small farm.

_____

_____

Learners are encouraged to think of tools they already know (e.g., a mobile weather app, a pest-diagnosis application, a farm-management platform, or an online marketplace) and briefly reflect on their usefulness for smallholder operations.

Model Answer (for Self-Assessment)
Example 1:
"A mobile weather-forecasting app can help a small farm decide when to irrigate or harvest. Reliable forecasts reduce the risk of crop damage from unexpected rain."

Example 2:
"A pest-diagnosis app uses machine learning to identify diseases from photos of plants and suggests treatment options. This enables early detection and reduces crop loss."

Example 3:
"A record-keeping app lets farmers track inputs and yields, giving insights into productivity and costs."

Unit 1 – Knowledge check

Which technology is an example of IoT in farming?

A) Spreadsheet to track expenses
B) Network of soil-moisture sensors transmitting data
C) Radio announcement about pest outbreaks
D) Mechanical plough

"Big data" and "artificial intelligence" are used in agriculture to:

A) Increase farm taxes
B) Analyse large datasets for decision-making
C) Replace farmers' knowledge entirely
D) Repair irrigation pipes

Which category uses drones and satellite imagery to monitor crop health?

A) IoT
B) Remote sensing
C) Robotics
D) Blockchain

The "triple-D" factors demonstrates:

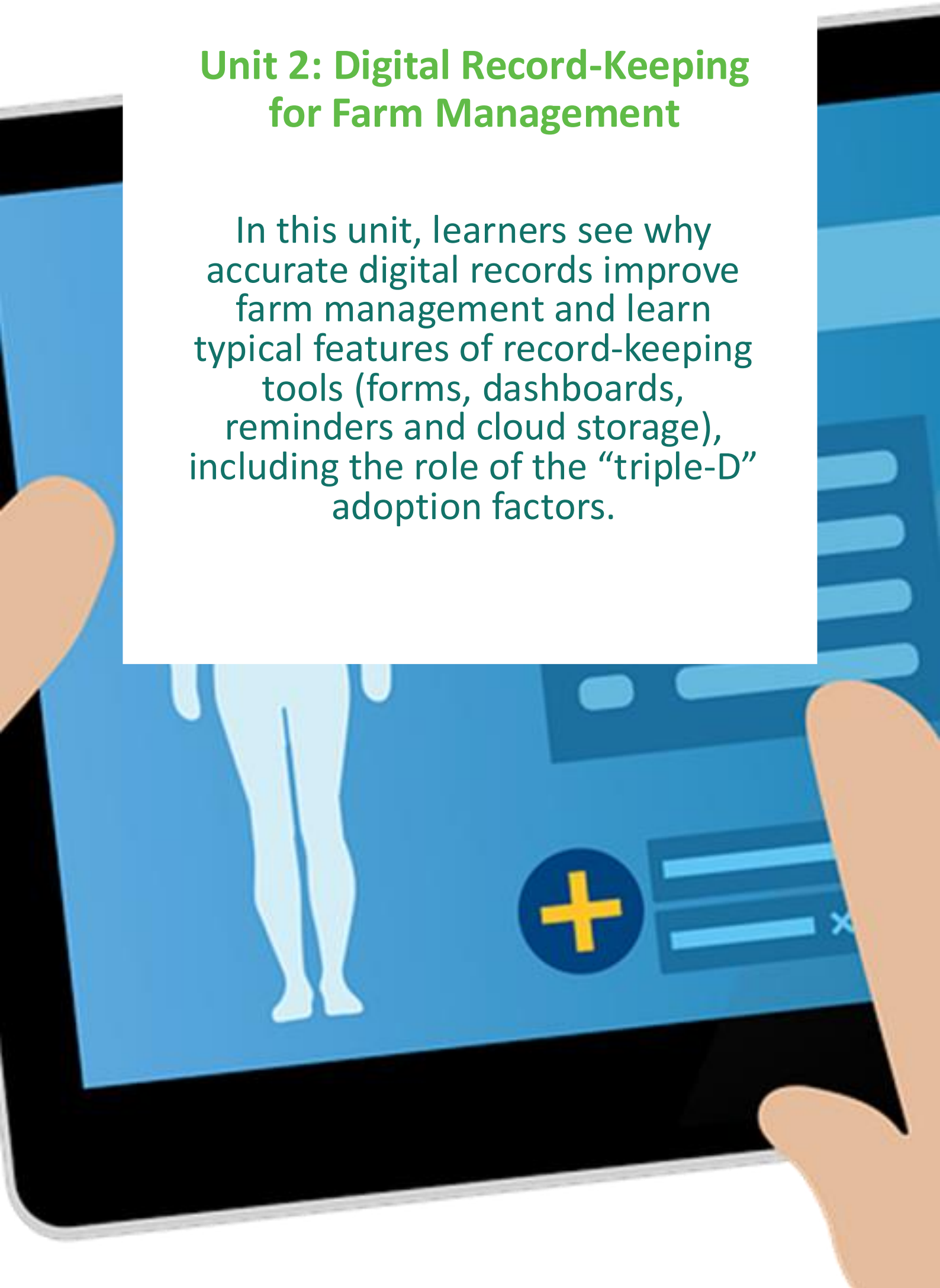
A) Three types of digital devices
B) Digital literacy, digital access and decent internet
C) Digital pests, diseases and diagnostics
D) Digital diaries, detectors and drones

Blockchain technology can help small farmers by:

A) Providing high-speed internet
B) Protecting fields against pests
C) Improving product traceability through a distributed ledger
D) Automating irrigation

Unit 2: Digital Record-Keeping for Farm Management

In this unit, learners see why accurate digital records improve farm management and learn typical features of record-keeping tools (forms, dashboards, reminders and cloud storage), including the role of the “triple-D” adoption factors.



Unit 2: Digital Record-Keeping for Farm Management

Why Digital Record-Keeping Matters

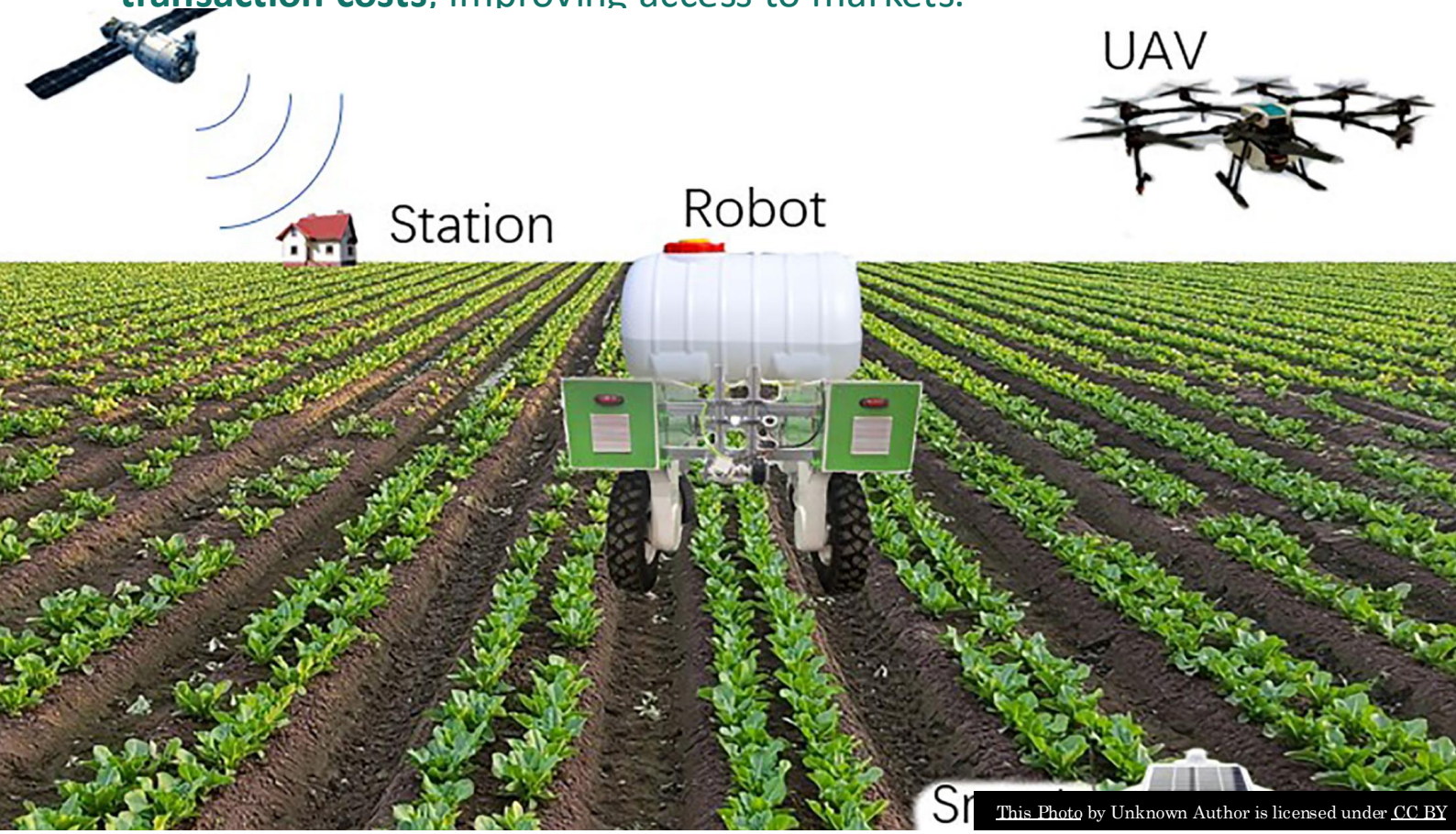
Digital record-keeping helps farmers **identify**, **describe**, and **analyse** what happens on the farm. It replaces paper notebooks with one **simple dashboard** that stores all information in one place.

When farmers **enter** data such as crop types, planting dates, yields or pest observations, they can:

- **Analyse** trends over time
- **Share** information with advisors
- **Make** faster, better decisions
- **Apply** climate-smart practices

Instead of sorting through paper notebooks, you have a single dashboard that stores and organises everything.

Digital tools also **reduce information asymmetry** and **lower transaction costs**, improving access to markets.



This Photo by Unknown Author is licensed under CC BY

Unit 2 – Common features & adoption

Modern record-keeping tools typically offer:



Forms for data entry

Example: crop, date, yield, notes...



Dashboards and reports

Dashboards and reports that visualise yields, input use and profits.



Reminders and alerts

Reminders and alerts to help you plan tasks like irrigation or harvesting.



Cloud storage

So your data is backed up and accessible on different devices.

UNIT 2 – REFLECTION ACTIVITY

Identify one benefit and one challenge of using digital record-keeping tools for farm management. Write your answer, then compare with the model answers.

Benefit:_____

Challenge:_____

Learners are encouraged to think about the practical implications of using digital tools in agricultural operations and reflect on both advantages and potential limitations.

Model Answer (for Self-Assessment)

Benefit:

Digital record-keeping streamlines operations and makes it easier to access data. It reduces paperwork and helps farmers make informed decisions.

Challenge:

Adoption can be limited by low digital literacy or poor internet connectivity. Farmers need access to devices and reliable internet to use these tools effectively.

Unit 2 – Knowledge check

Which is a benefit of digital record-keeping tools?
A) Increase paperwork
B) Lower transaction costs & improve decisions
C) Prevent crops from growing
D) Require no internet access

Which data fields are typical in a digital farm record?
A) Crop type, planting date, yield, pest observations
B) Weather forecast and radio frequencies
C) Music playlist and TV shows
D) Names of livestock only

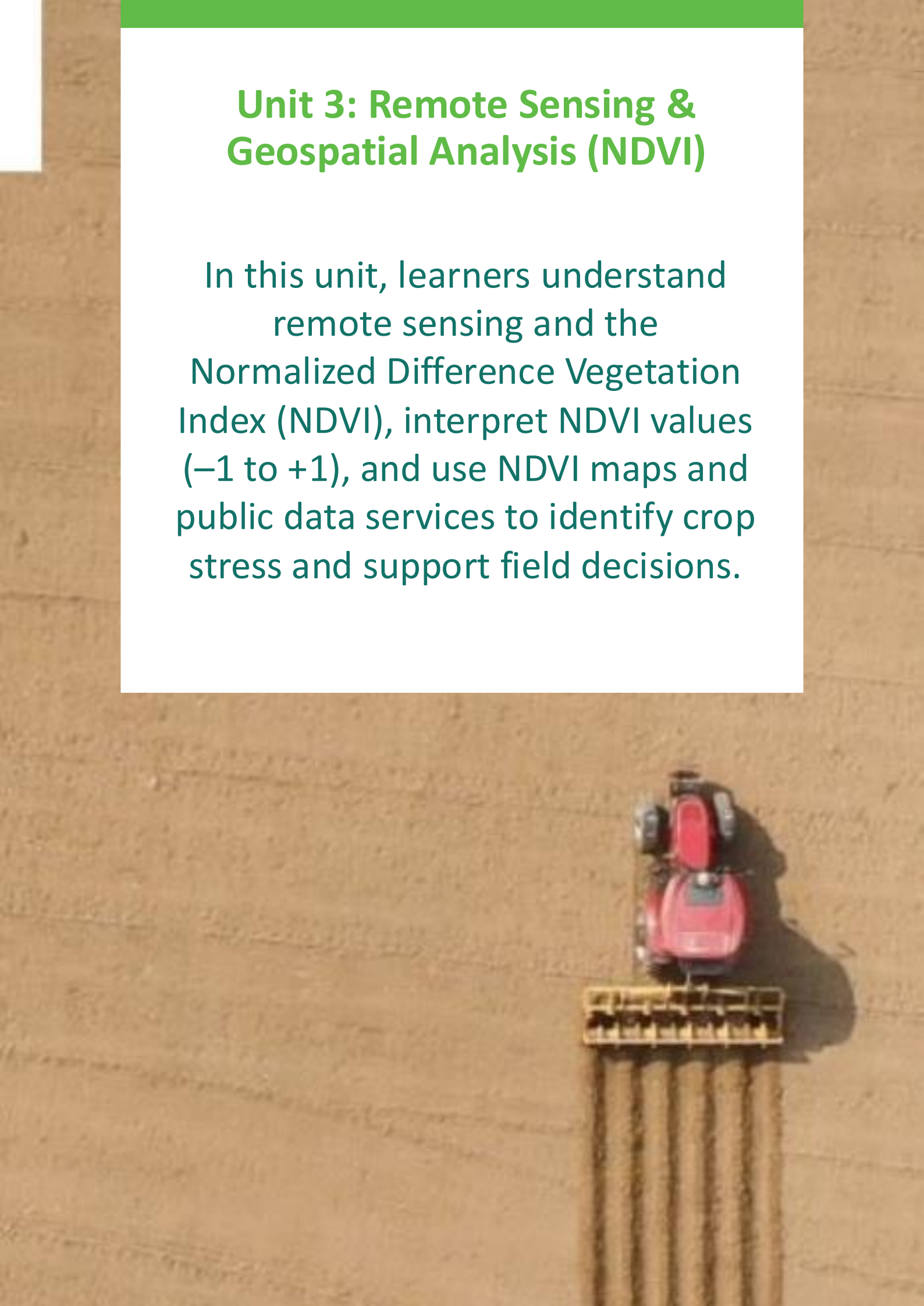
The "triple-D" adoption factors are:
A) Digital diaries, drones and databases
B) Digital literacy, digital access and decent internet
C) Drought, disease and debt
D) Digging, drilling and distributing

Why is cloud storage important?
A) Data is safe, backed up and accessible across devices
B) Prevents rain damaging notebooks
C) Removes need for devices
D) Automatically increases yields

Which could be a challenge when adopting these tools?
A) Too many notebooks
B) Lack of smartphones or stable internet
C) Too much free time
D) Low seed prices

Unit 3: Remote Sensing & Geospatial Analysis (NDVI)

In this unit, learners understand remote sensing and the Normalized Difference Vegetation Index (NDVI), interpret NDVI values (–1 to +1), and use NDVI maps and public data services to identify crop stress and support field decisions.



Unit 3: Remote Sensing & Geospatial Analysis (NDVI)

What remote sensing means in agriculture

Remote sensing helps farmers identify, describe, and monitor what is happening in their fields without being physically present.

It refers to collecting data from a distance using sensors on satellites, drones or aircraft. “Remote sensing refers to collecting data about the Earth from a distance using sensors on satellites, drones or aircraft.”

These sensors measure how surfaces reflect or emit light. Farmers can analyse this information to:

- Monitor crop growth
- Detect stress early
- Observe large areas quickly
- Apply better management decisions

In agriculture, remote sensing helps farmers monitor crops over large areas without stepping into every field.

Unit 3: Remote Sensing & Geospatial Analysis (NDVI)

Understanding NDVI (Normalized Difference Vegetation Index)

NDVI is one of the most widely used vegetation indices in agriculture. It helps farmers explain, compare, and analyse crop health.

NDVI works by comparing:

- Red light (absorbed by healthy plants)
- Near-infrared light (NIR) (reflected by healthy plants)

Healthy green plants reflect more NIR light and absorb more red light; stressed or sparse vegetation reflects less NIR.

NDVI values and what they mean

NDVI ranges from –1 to +1:

- **Below 0** → water, clouds
- **Around 0** → bare soil
- **0.1–0.5** → sparse vegetation
- **Above 0.6** → dense, healthy vegetation

These values help farmers **identify** problem areas and **apply** targeted actions.

How NDVI Supports Farm Decisions

NDVI helps farmers identify, describe, explain, and analyse what is happening in their fields. It turns satellite or drone data into simple indicators of crop health.

1. Detect crop stress

NDVI allows farmers to identify areas where crops may be stressed by drought, pests or disease.

- **Compare** current NDVI with historical averages
- **Spot** areas where vegetation is below normal
- **Explain** possible water stress or early damage

2. Monitor growth stages

NDVI helps farmers track how crops develop over time.

- Rising NDVI → vegetative growth
- Peak NDVI → flowering or grain filling
- Declining NDVI → maturity or stress

This supports better planning and timing of field operations.

3. Estimate yields and biomass

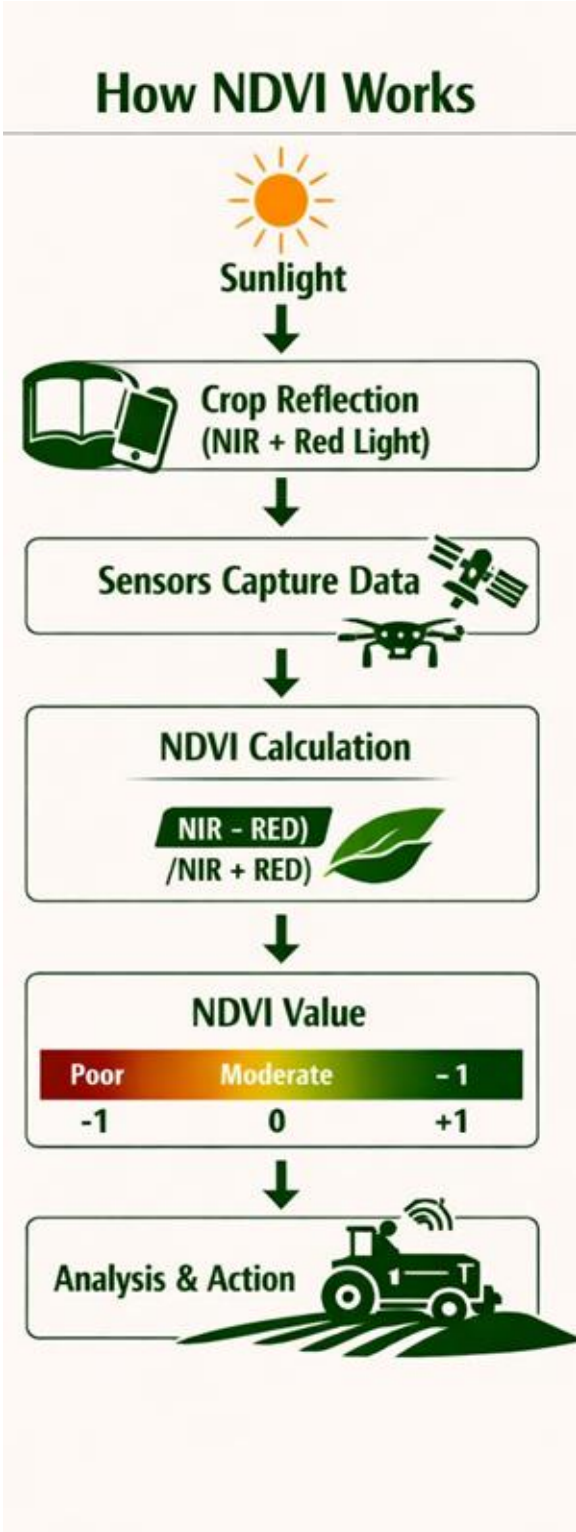
NDVI values relate to leaf area and photosynthesis. Farmers can analyse NDVI patterns to:

- Estimate biomass
- Predict potential yields
- Apply targeted management where needed

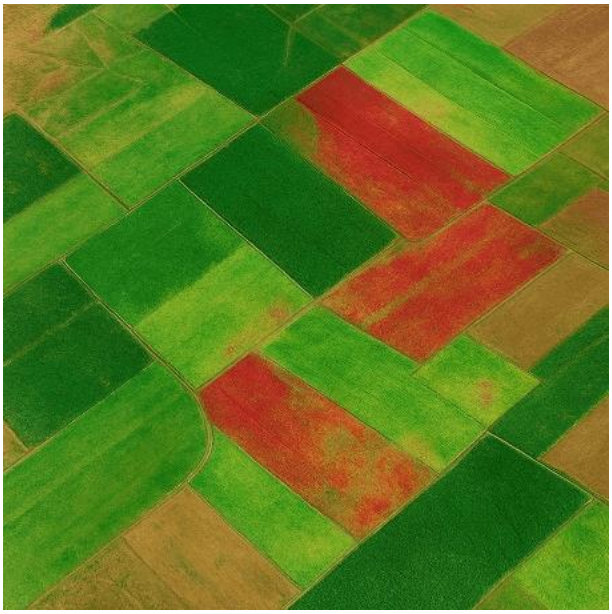
4. Prioritise field visits

Because remote sensing covers large areas quickly, farmers can:

- Identify which fields need attention
- Target scouting
- Plan interventions more efficiently



UNIT 3 – REFLECTION ACTIVITY



You see a sample NDVI satellite image showing a farm plot with different shades of green and brown. Review the image and consider the prompts below.

1. Identify a low-NDVI area
Look for brown or yellowish areas (indicating low NDVI) and describe where they are located (e.g., “north-east corner of the field”).

2. Explain the possible cause
Suggest a reason for the low NDVI: drought stress, poor soil fertility, pest infestation, or recent harvesting.

3. Identify a high-NDVI area
Look for dark green areas (high NDVI) and describe their location.

4. Explain why NDVI is high
Consider factors such as adequate moisture, healthy crops, or good management practices.

Model Responses (for Self-Assessment)
Low-NDVI area:
“The south-west corner appears brown, indicating low NDVI. This could be due to water stress or soil degradation.”

High-NDVI area:
“The central portion of the field shows dark green pixels, suggesting healthy vegetation with adequate moisture.”

UNIT 3 – REFLECTION ACTIVITY

Weather and Soil Data Services

Review the examples below showing digital services that provide weather or soil data and how farmers use them in practice.

Learners are encouraged to explore additional services they may already know, such as local weather applications or agronomic platforms. Feel free to add other services you know (e.g., local weather apps or agronomic platforms).

Service Name	How Farmers Use It
ISU Soil Moisture Network	Monitors soil temperature and moisture at various depths. Farmers use this data to determine optimal planting times (e.g., corn germination around 50 °F).
CoCoRaHS (Community Collaborative Rain, Hail & Snow Network)	Provides local rainfall data searchable by site and date. Farmers use it to track precipitation patterns and plan irrigation.
National Weather Service (NWS) Tabular Forecast	Offers hourly forecasts of wind speed, direction, and temperature. Farmers use this information to schedule spraying and field operations.
NASA Soil Moisture Portal	Estimates volumetric soil moisture at different depths. Farmers use it to assess drought risk and plan irrigation.

Unit 3 – Knowledge check

NDVI is a measure of:
A) Crop yield
B) Plant health and vegetation density
C) Soil pH
D) Irrigation water pressure

Healthy green plants typically reflect more:
A) Red light
B) Near-infrared (NIR) light
C) Ultraviolet light
D) X-rays

NDVI values near 0 usually indicate:
A) Dense green vegetation
B) Bare soil or minimal vegetation
C) Severe drought
D) Heavy rainfall

Negative NDVI values often indicate:
A) Healthy crops
B) Water or clouds
C) Fertile soil
D) High yields

Remote sensing data can help farmers by:
A) Reducing the need for any field visits
B) Detecting stress early and prioritising scouting
C) Automatically planting seeds
D) Replacing irrigation systems

Unit 4: IoT Sensors & Smart Irrigation

In this unit, learners define IoT sensors in farming, see common devices (soil-moisture probes, weather stations, temperature sensors), and use simple dashboard data to plan irrigation while considering cost, connectivity/power, and placement/maintenance.

Unit 4: IoT Sensors & Smart Irrigation

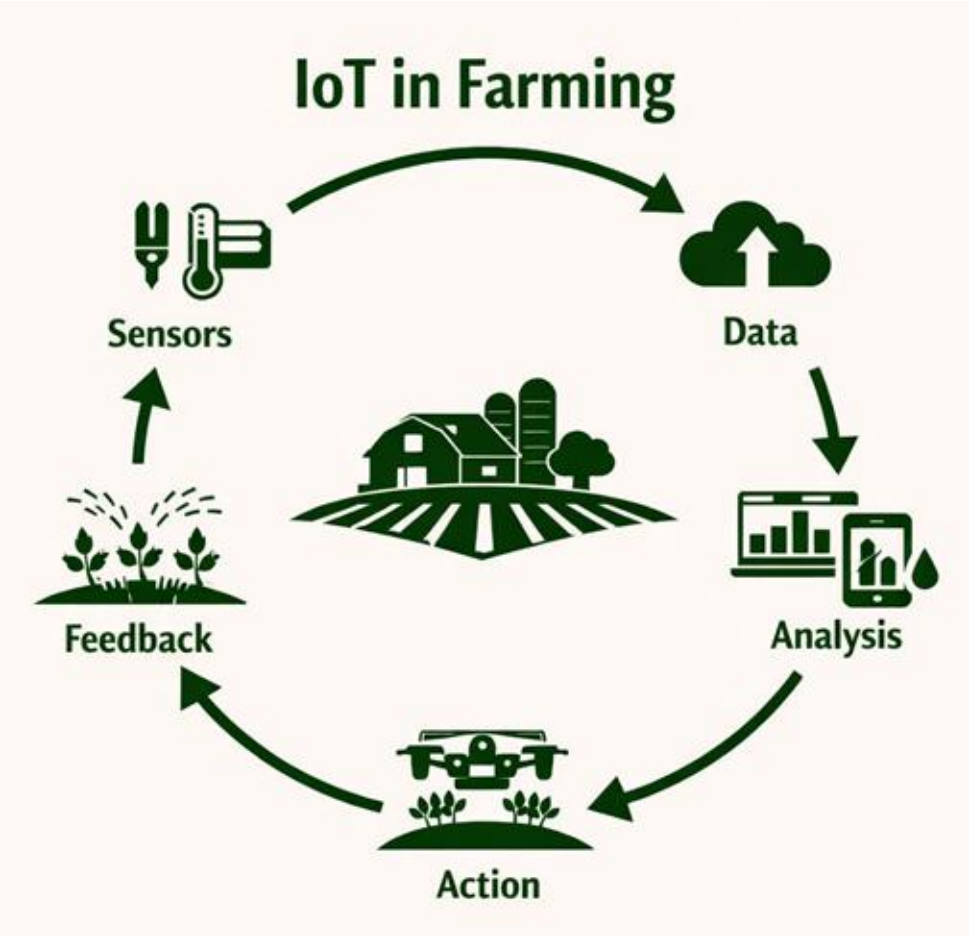
What IoT sensors are in farming

IoT refers to **interconnected devices** that **collect** and **share** data. In farming, IoT sensors help farmers **identify**, **describe**, and **monitor** real-time field conditions.

Farmers typically use:

- **Soil moisture probes**
- **Weather stations**
- **Temperature and humidity sensors**

These devices **measure** key variables such as soil moisture, temperature, humidity and light. The data are **sent** to a phone app or online dashboard where farmers can **explain** what is happening and **apply** decisions based on evidence.



Unit 4: IoT Sensors & Smart Irrigation

How IoT supports smart irrigation

IoT sensors give farmers **real-time feedback** on water needs.
Sensors help farmers:

- **Determine** when to irrigate
- **Decide** how much water to apply
- **Analyse** patterns of soil moisture over time

This leads to:

- **Reduced water use**
- **Prevention of over-watering**
- **Better environmental protection**

Automation for efficiency

Some systems can **automatically adjust** irrigation schedules based on sensor readings.
This allows farmers to:

- **Save time**
- **Focus** on other tasks
- **Apply** more precise water management

Unit 4 – SIMULATED DASHBOARD ACTIVITY

Below is a sample dashboard with soil moisture (%) and temperature (°C) data for two fields.

Field	Soil Moisture (%)	Soil Temperature (°C)
Field A	28 %	22 °C
Field B	45 %	23 °C

Steps for Analysis

1. Interpret the moisture levels

A typical threshold for many crops is around 30 % soil moisture. Below this value, irrigation may be needed.

2. Consider temperature

Higher temperatures increase evaporation, meaning soil dries out faster.

3. Develop an irrigation plan

For example:

Sample plan:

"I will irrigate Field A for 20 minutes when soil moisture drops below 30 %. Field B is currently above 40 %, so no irrigation is needed until it falls below 30 %."

Model Irrigation Plan (for Self-Assessment)

Field A:

Moisture is 28 %, below the 30 % threshold. Plan to irrigate for 20 minutes (or enough to raise soil moisture to approximately 40 %) and re-check in 24 hours.

Field B:

Moisture is 45 %, well above the threshold. No irrigation needed now; monitor and irrigate only when moisture falls below 30 %.

Unit 4 – REFLECTION ACTIVITY

Considerations for Installing IoT Sensors

Question:
What are two considerations for installing IoT sensors on a small farm?

Reflect on practical and technical factors before reviewing the model answers below.

Model Answers (for Self-Assessment)
Cost and scalability:
Sensors and data plans can be expensive. Small farms should start with a limited number of sensors and expand as benefits are realised.

Connectivity and power:
IoT devices require internet access or cellular coverage to transmit data. Ensure your farm has reliable connectivity and consider power sources (battery, solar).

Placement and maintenance:
Place sensors at representative locations (different soil types, elevations). Regularly check and calibrate sensors to ensure accurate data.

Unit 4 – Knowledge check

IoT sensors help farmers by:
A) Collecting real-time data about soil/crops
B) Replacing all irrigation pipes
C) Increasing paperwork
D) Preventing all pests

Soil-moisture sensors can support:
A) Music streaming
B) Irrigation scheduling decisions
C) Seed packaging design
D) Tractor repairs

Which is an example of an IoT device on a farm?
A) Printed book
B) Weather station connected to a dashboard
C) Handwritten ledger
D) Plastic bucket

A key challenge for small farms adopting IoT is often:
A) Too much internet bandwidth
B) Device cost and connectivity
C) Too many dashboards
D) Excess rainfall

Smart irrigation aims to:
A) Use water only when needed
B) Water fields continuously
C) Remove need for monitoring
D) Increase transaction costs

Unit 4: IoT Sensors & Smart Irrigation

In this unit, learners see how AI analyses farm data to support decisions on nutrients, fertiliser, crop rotation and early stress detection, and recognise limitations such as data quality and local infrastructure.

Unit 5: Artificial Intelligence & Data Analytics

What AI Means for Farmers

1. Understand AI in Agriculture

Artificial Intelligence (AI) = computers that learn from data and make decisions

In farming, AI uses:

- Sensors
- Soil samples
- Historical farm data

2. How AI Supports Farming

AI helps farmers to:

- Analyse soil and crop data
- Predict crop needs
- Recommend: Fertiliser use & Crop rotation plans
- Monitor crops using: Satellites & Drones

3. Benefits of AI

- Real-time insights for faster decisions
- Improved efficiency in resource use
- Early detection of:
  - Diseases
  - Pests
  - Crop stress

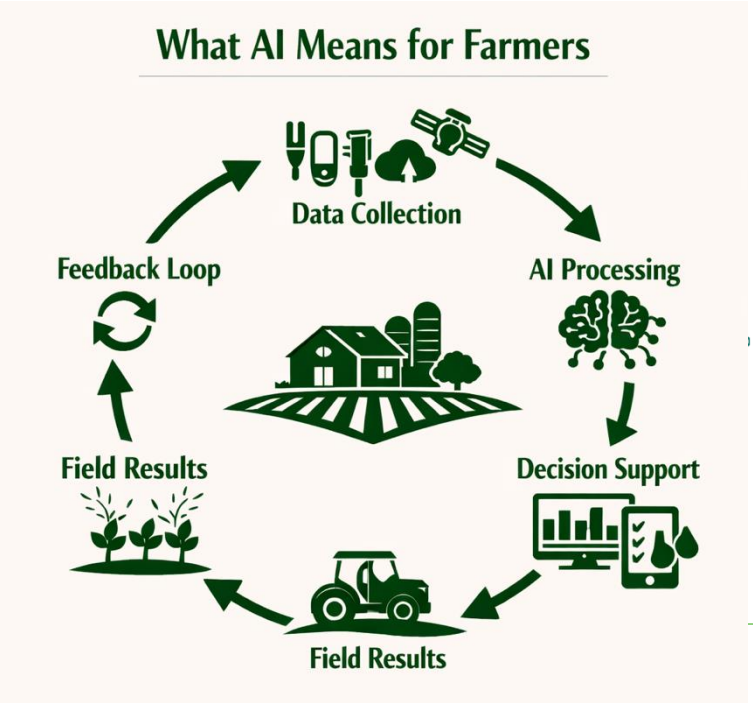
4. Limitations of AI

AI is useful, but depends on:

- Data quality (accurate, local data needed)
- Digital infrastructure (internet, tools)
- Access to technology (not equal for all farmers)

5. Role of the Farmer

- AI supports, but does not replace farmers
- Farmers should:
  - Combine AI recommendations with experience
  - Use local knowledge for better decisions



Unit 5 – WEATHER FORECAST ACTIVITY

Below is a five-day weather forecast showing expected temperature (°C) and rainfall (mm). Review the table and consider how you would create a fertilisation or irrigation plan.

Day	Date	Temperature (°C)	Rainfall (mm)
1	26 May 2025	28	0
2	27 May 2025	30	0
3	28 May 2025	29	12
4	29 May 2025	27	5
5	30 May 2025	31	0

Instructions for Analysis

1. Review the forecast

Note when rain is expected and how temperatures fluctuate across the five days.

2. Decide when to apply fertiliser or irrigation

Consider how rainfall affects nutrient absorption and how high temperatures influence evaporation.

3. Develop your plan

Include both your decision and the reasoning behind it.

Model Plan (for Self-Assessment)

Fertilisation: Apply fertiliser on day 2 (27 May). Rain is forecast for day 3, so nutrients will soak into the soil naturally without additional irrigation.

Irrigation: No irrigation is needed on days 3 and 4 because of rainfall. If soil moisture drops on day 5, irrigate lightly in the evening to reduce evaporation.

Review the model plan and reflect on how your reasoning compares. Adjust your approach where necessary.

Unit 5 – WEATHER FORECAST ACTIVITY

QUALITATIVE COMPARISON ACTIVITY

After completing the weather forecast activity, review the model plan provided and reflect on the following questions:

Did you account for rainfall in your schedule?

_____

Did you consider how temperature and moisture affect nutrient uptake?

_____

Are your application timings realistic and practical for your farm context?

_____

Take a moment to evaluate your reasoning and identify any adjustments that could improve your fertilisation or irrigation planning.

Unit 5 – Knowledge check

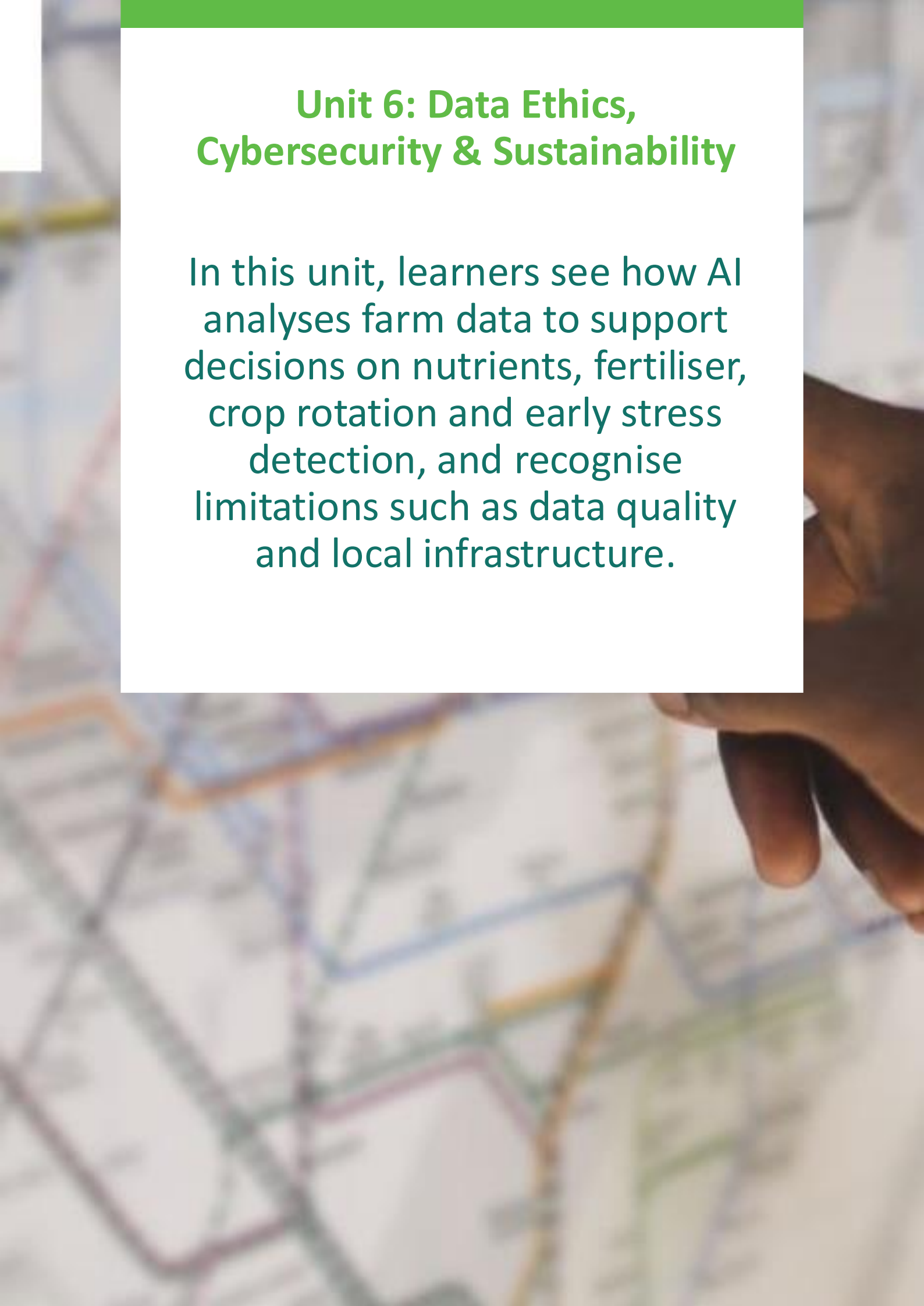
AI in farming is used to:
A) Predict trends and optimise resources
B) Replace all human decisions
C) Eliminate need for sensors
D) Remove rainfall

A limitation of AI in agriculture is:
A) Too much sunlight
B) Lack of quality data and internet
C) Too many tractors
D) High soil fertility

AI can help by:
A) Analysing imagery to detect stress early
B) Painting crops green
C) Cancelling droughts
D) Creating more land

A benefit of AI-powered analytics is:
A) Increased paperwork
B) Better decision-making and efficiency
C) Reduced crop diversity
D) No need for planning

Farmers should use AI recommendations:
A) Without any local knowledge
B) Alongside their experience and local conditions
C) Only once per year
D) Only on paper notebooks



Unit 6: Data Ethics, Cybersecurity & Sustainability

In this unit, learners see how AI analyses farm data to support decisions on nutrients, fertiliser, crop rotation and early stress detection, and recognise limitations such as data quality and local infrastructure.

Unit 6: Data Ethics, Cybersecurity & Sustainability

Introduction

Digital tools, from GPS-guided tractors to smartphone apps and soil sensors, are transforming agriculture. These tools collect large amounts of data about fields, crops, livestock and even people. Farmers become stewards of sensitive information about their land and business. Handling this data ethically and securely protects your reputation, complies with the law and ensures digital technologies continue to benefit your farm.

Data ethics is about respecting privacy, being transparent about how data is used, and ensuring fair treatment of all people involved. The General Data Protection Regulation (GDPR) is an EU law that protects personal information. It applies to farmers whenever they collect data about employees, customers or suppliers, or share sensor data with external providers. Cybersecurity involves protecting your data and systems from threats such as hacking, malware and fraud. Simple measures like strong passwords, secure networks and cautious online behaviour can prevent serious problems.

Digitalisation and sustainability go hand in hand. Smart tools can help optimise water and fertiliser use, reduce fuel consumption and improve animal welfare. Remote monitoring saves time and resources, while precise data supports decisions that benefit both your business and the environment. To enjoy these benefits, you must use digital tools responsibly.

Unit 6: Data Ethics, Cybersecurity & Sustainability

UNIT 6 – READING ACTIVITY

GDPR basics for farmers

• Purpose limitation: Collect data only for specific, legitimate reasons, such as monitoring soil moisture. Don't reuse data for unrelated purposes without consent.

• Lawfulness, fairness and transparency: Inform people about why and how their data will be used. If sensor data includes personal details (e.g., employee locations), obtain consent or ensure you have a legal basis (e.g., for payroll).

• Data minimisation: Gather only the data you need. For example, an app that maps fields does not need personal addresses.

• Accuracy: Keep records accurate and up to date. Correct or delete incorrect data promptly.

• Storage limitation: Keep data only as long as necessary. Set a schedule to review and delete old sensor logs.

• Security: Protect data with encryption, password protection and access controls. Restrict access to those who need it.

Unit 6: Data Ethics, Cybersecurity & Sustainability

UNIT 6 – READING ACTIVITY

Cybersecurity Essentials

Digital tools improve farm efficiency, but they also require proper security practices. The following principles help protect farm data and digital systems:

Strong Passwords and Passphrases

Use complex, unique passwords for different services. Passphrases made of random words are easier to remember and harder to crack.

Two-Factor Authentication (2FA)

Enable 2FA where possible. It adds a second step (like a code sent to your phone) to logins, making accounts harder to break into.

Beware of Phishing

Fraudsters send fake emails or messages to trick you into revealing information. Check the sender's address, avoid clicking suspicious links, and never share passwords.

Secure Networks

Avoid public Wi-Fi for sensitive tasks. Protect your home and office networks with strong passwords and updated routers.

Software Updates

Keep devices and apps up to date. Updates fix security weaknesses.

Backups

Regularly back up important data to a secure location, such as an external drive or a trusted cloud service.

Unit 6: Data Ethics, Cybersecurity & Sustainability

UNIT 6 – READING ACTIVITY

Digital Ethics

Using digital tools responsibly is just as important as using them efficiently. Ethical data practices protect individuals, farms, and communities.

Responsible Data Sharing

Share data only with trusted partners and only when necessary. Ensure third-party services have clear privacy policies and comply with GDPR.

Avoid Misuse

Do not use data to exploit or discriminate against others. Do not repurpose personal data for marketing without consent.

Transparency and Accountability

Clearly communicate to workers and partners how data is collected and used. If mistakes occur, address them openly and correct them.

Fairness in Automation

When using algorithms (for irrigation, feeding, etc.), ensure decisions are fair and consider environmental and social impacts.

Unit 6 – CASE SCENARIO ACTIVITY

Andreas is a farmer in rural Cyprus. To save water and improve crop yields, he installs soil-moisture sensors across his orange grove. The sensors connect to a free mobile app provided by an overseas company. The app requires him to create an account, upload data and share his farm's location. Without reading the privacy policy, Andreas uses the same password he uses for email.

The app syncs his sensor data over a public Wi-Fi network at the local café and stores the data on external servers abroad. Over time, the app collects information about his irrigation habits, harvest timings and yields. He begins receiving unexpected marketing emails that seem related to his farming practices and notices that some local competitors mention similar insights.

Your Task
Read the scenario above. Identify two potential data security risks Andreas faces when using this third-party app. For each risk, consider an appropriate mitigation measure.

Reflect on possible vulnerabilities related to password practices, network usage, and data sharing policies before reviewing the model responses below.

Unit 6 – CASE SCENARIO ACTIVITY

Model Responses (for Self-Assessment)
Risk 1: Unauthorised Access or Data Breach
By using the same password for multiple accounts and uploading data over a public Wi-Fi network, Andreas exposes his account to hacking. Attackers could intercept his login details or steal sensor data from the app's servers.

Mitigation:
Use unique, strong passwords for each account and enable two-factor authentication. Avoid public Wi-Fi for data uploads; instead, use a secure, password-protected network. Choose apps that encrypt data during transfer and storage.

Risk 2: Misuse of Data by the Third-Party Provider
The app's company might analyse or sell his farm data without his knowledge, revealing sensitive information about yields, irrigation practices and harvest times. Competitors or advertisers could gain an unfair advantage.

Mitigation:
Read the app's privacy policy to understand how data is used. Choose services that comply with GDPR and clearly state they will not share data without consent. Limit the amount of data you share, anonymise it where possible, and regularly review what permissions you have granted. If in doubt, switch to a more reputable service.

Unit 6 – Assessment

GDPR is primarily about:
A) Animal health
B) Data privacy and protection
C) Weather forecasting
D) Crop rotation

A strong cybersecurity practice is:
A) Use the same password everywhere
B) Two-factor authentication
C) Share passwords with friends
D) Disable updates

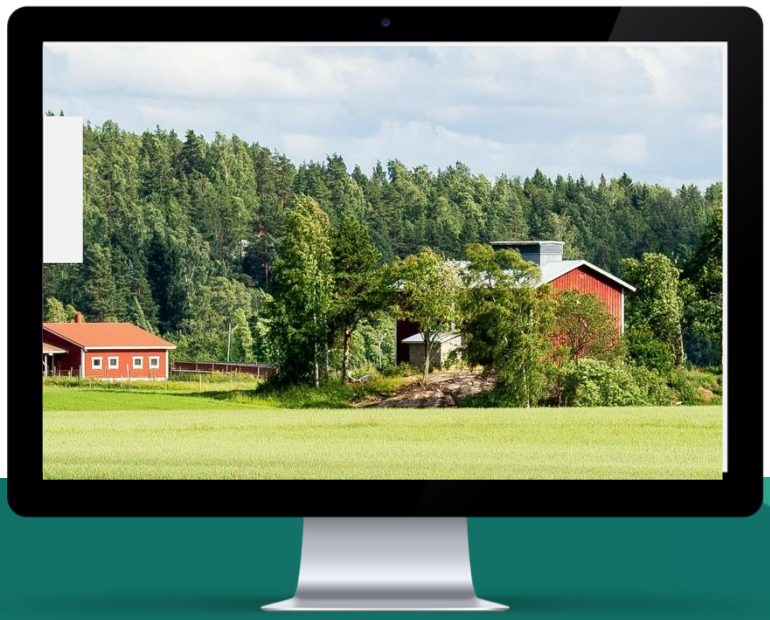
Which is an example of unethical data use?
A) Sharing farm records with an advisor with permission
B) Selling farmers' data without consent
C) Using data for irrigation planning
D) Backing up data securely

A sustainable benefit of digital farming tools is:
A) Increased water use
B) Better input efficiency and reduced waste
C) More paperwork
D) Less planning

One way to reduce phishing risk is to:
A) Click unknown links quickly
B) Verify messages and avoid suspicious links
C) Ignore updates
D) Post passwords online

smart 4food

innovative microlearning for farmers



Module produced by: Magnetar

www.**smart4food**.eu

Funded by the European Union