smart4food
innovative microlearning for farmers

Module
01

Digital Tools for Smart Farming

www.**smart4food**.eu

TABLE OF CONTENTS

innovative microlearning for farmers

Module Information

Project partner name: Magnetar

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.

Module Core Concept Content

Module Core Concept Content

Digital tools are increasingly transforming small-scale farming by improving access to information, supporting better decision-making, and enabling more efficient and sustainable agricultural practices. This module introduces the concept of smart farming and explores how basic digital tools, such as mobile applications, online platforms, and simple ICT solutions, can support farmers in their daily activities, from planning and monitoring to record-keeping and evaluation.

The module focuses on accessible and affordable digital solutions suitable for smallholders, including mobile applications for farm management, digital forms and records, online services for weather, soil and crop advice, and basic data analysis tools. Emphasis is placed on practical use rather than advanced technical knowledge, ensuring that learners can immediately apply digital solutions in real farming contexts.

Learning is organised through interactive and practice-oriented methods. Learners engage with demonstrations of selected digital tools, hands-on activities using mobile devices, step-by-step guidance through short tutorials, and real-life examples drawn from farming practice. Peer discussion and feedback are used to support reflection and knowledge exchange.

In addition to technical skills, the module highlights the importance of safe, ethical, and responsible use of digital technologies. Learners are introduced to basic principles of data management, digital ethics, and secure online practices, ensuring that digitalisation supports productivity while protecting personal and business data.

Unit 1: Introduction to Digital Agriculture & Smart Farming Tools (Part 1)

Introduction

Digitalisation is transforming agriculture by reducing information gaps and helping farmers make better decisions. By using digital tools, small farms can access real-time weather forecasts, monitor crop health and track yields more effectively. Evidence shows that digital technologies can lower transaction costs and reduce information asymmetry, supporting faster adoption of climate-smart practices and improved access to markets.

Digital solutions fall into several broad categories:

Internet of Things (IoT):networked sensors and devices that collect data on soil moisture, temperature, livestock health and more. These tools integrate data collection and analysis so farmers can quickly adjust practices.

Big Data and Artificial Intelligence (AI): large datasets and smart algorithms that analyse weather trends, market prices and pest outbreaks.

Remote sensing and monitoring: satellite imagery, drones and other technologies that provide high-resolution data to track vegetation and soil conditions.

Blockchain and traceability platforms: decentralised ledgers that verify transactions and help trace product origin.

Robotics and automation: machines that perform repetitive tasks like weeding or sampling.

Augmented/virtual reality: simulations used for training and planning.

Adoption of these technologies depends on the "triple-D" context:

Digital literacy: farmers' ability to use devices, apps and online services.

Digital access: availability of appropriate hardware and connectivity.

Decent internet: adequate speed and reliability of the connection.

Unit 1: Introduction to Digital Agriculture & Smart Farming Tools (Part 2)

Understanding these factors helps tailor tools to local realities.

Reflection activity

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

Learners should type their answer in the provided text field. They 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 explain 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."
Alternatively: "A record-keeping app lets farmers track inputs and yields, giving insights into productivity and costs."

Unit 2: Digital Record-Keeping for Farm Management

Guided tutorial: Why digital record-keeping matters

Keeping accurate records is essential for any farm. When you enter data, such as crop types, planting dates, yields and pest observations, into a digital tool, you can quickly analyse trends, share information with advisors and make better decisions. Digital technologies reduce information asymmetry and lower transaction costs, which supports climate-smart practices and improved access to markets. Instead of sorting through paper notebooks, you have a single dashboard that stores and organises everything.

Modern record-keeping tools typically offer:

Forms for data entry (crop, date, yield, notes).

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

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.

Successful adoption depends on the "triple-D" factors: digital literacy (knowing how to use devices and apps), digital access (owning a smartphone or computer), and decent internet to synchronise your data.

Reflection activity

Question: Identify one benefit and one challenge of using digital record-keeping tools for farm management.

Type your answer in the space provided. Then compare your response with the model answers below.

Model answers:

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 decent internet to use these tools effectively.

Unit 3 – Remote Sensing & Geospatial Analysis (Learner-ready content) (Part 1)

Tutorial: Understanding remote sensing and NDVI

Remote sensing refers to collecting data about the Earth from a distance using sensors on satellites, drones or aircraft. These sensors measure how different surfaces reflect or emit light. In agriculture, remote sensing helps farmers monitor crops over large areas without stepping into every field.

One of the most widely used indices derived from remote sensing is the Normalized Difference Vegetation Index (NDVI). NDVI measures the amount and vigour of vegetation by comparing reflectance in the red and near-infrared (NIR) portions of the electromagnetic spectrum. Healthy green plants reflect more NIR light and absorb more red light; stressed or sparse vegetation reflects less NIR.

where RED and NIR are the reflectance values from those bands. NDVI values range from –1 to +1; negative values indicate water or clouds, values near zero represent bare soil, and higher positive values correspond to increasing vegetation density. For example, values between 0.1–0.5 indicate sparse vegetation, while values above 0.6 indicate dense green vegetation.

NDVI helps farmers:

Detect areas of crop stress caused by drought or disease. Comparing current NDVI with historical averages reveals where vegetation is below average, indicating possible water stress.

Monitor growth stages. Rising NDVI values indicate vegetative growth, while peaks correspond to flowering and grain filling.

Estimate yields and biomass, as NDVI relates to leaf area and photosynthetic activity.

Because remote sensing covers large areas quickly, farmers can prioritise field visits, target scouting and plan interventions more efficiently.

Interactive image activity: Describing NDVI patterns

You see a sample NDVI satellite image showing a farm plot with different shades of green and brown. Use the image to answer the prompts below:

Unit 3 – Remote Sensing & Geospatial Analysis (Learner-ready content) (Part 2)

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").

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

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

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."

Fill-in table: Weather and soil data services

Complete the table in your course by entering at least two digital services that provide weather or soil data and their uses. Use the examples below as guidance.

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 4 – IoT Sensors & Smart Irrigation (Part 1)

Explainer: What are IoT sensors in farming?

The Internet of Things (IoT) refers to a network of interconnected devices that collect and exchange data. In farming, IoT devices include soil-moisture probes, weather stations and temperature sensors. They measure variables such as soil moisture, temperature, humidity and light. The data are sent to a central system (a phone app or online dashboard) where farmers can see real-time conditions and make decisions.

Using these data helps farmers optimise irrigation. Sensors provide real-time feedback, enabling farm owners to determine when and how much water to apply. This precision reduces water use, prevents over-watering and protects the environment. Automated systems can even adjust irrigation schedules automatically based on sensor readings, freeing farmers to focus on other tasks.

Simulated dashboard activity

Below is a sample dashboard with soil moisture (%) and temperature (°C) data for two fields. Review the data and write an irrigation plan in the text box provided.

Field | Soil moisture (%) | Soil temperature (°C)
Field A | 28 % | 22 °C
Field B | 45 % | 23 °C

Use the following steps:

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

Consider temperature: higher temperatures increase evaporation, meaning soil dries out faster.

Write your plan. For example:

Your plan (sample): "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 %."

Unit 4 – IoT Sensors & Smart Irrigation (Part 2)

Field A: Moisture is 28 %, below the 30 % threshold. Plan to irrigate for 20 minutes (or enough to raise soil moisture to ~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 %.

Text prompt: Considerations for installing IoT sensors

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

Type your answer in the space provided, then compare with the model answers.

Model answers:

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 5 – Artificial Intelligence & Data Analytics (Learner-ready content) (Part 1)

Introductory text: What AI means for farmers

Artificial intelligence (AI) is a branch of computer science that enables computers to learn from data and make predictions or decisions. In agriculture, AI uses machine-learning algorithms to process information from sensors, historical records and soil samples. By analysing these data, AI can optimise nutrient levels, recommend fertiliser schedules and support crop-rotation decisions. AI systems also process satellite imagery and drone data to monitor crops in real time. They detect signs of stress, disease or pest infestations early, allowing farmers to take action before yields are affected.

AI is powerful because it combines big data and analytics to produce timely insights, but it has limitations. The effectiveness of AI-enabled technologies depends largely on quality, localised input data and adequate digital infrastructure. Smallholder farmers often lack access to precision-agriculture technologies, meaning benefits can be unevenly distributed. Therefore, while AI can support decision-making, farmers must use it alongside their experience and local knowledge.

Unit 5 – Artificial Intelligence & Data Analytics (Learner-ready content) (Part 2)

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:

Review the forecast. Note when rain is expected

Decide when to apply fertiliser or irrigation.

Write your plan in the provided text box, including your reasoning.

Model plan (for self-assessment):

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

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

Compare your plan to the model and adjust your reasoning accordingly.

Qualitative comparison activity

After completing the weather forecast activity, read the model plan provided and reflect:

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?

Unit 6: Data Ethics, Cybersecurity & Sustainability (Part 1)

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.

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.

Unit 6: Data Ethics, Cybersecurity & Sustainability (Part 2)

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.

Cybersecurity essentials

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 trusted cloud service.

Digital ethics

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. Don't 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.

Case Scenario Activity

Narrative scenario

Unit 6: Data Ethics, Cybersecurity & Sustainability (Part 3)

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, suggest a mitigation measure. Write your answers in a few sentences, then compare them with the model responses below.

Model responses

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.

Unit 6: Data Ethics, Cybersecurity & Sustainability (Part 4)

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.

Reflection Activity

Prompt: "How can digitalisation contribute to sustainability on your farm?"

Reflect on how digital tools you use—or could use—help reduce waste, save resources or improve environmental outcomes. Write 3–5 sentences.

Sample reflection

Digital tools can make farming more sustainable by helping me use resources more efficiently. For example, a sensor-based irrigation system waters crops only when they need it, saving water. GPS-guided tractors reduce fuel consumption by avoiding overlap in the field. Apps that track fertiliser and pesticide use help me apply the right amount at the right time, reducing run-off and soil damage. Over time, the data collected guides better decisions that increase yields and protect the environment.

Multimedia learning materials

Infographics can be inserted in microunits on previous pages.

Also links to videos and podcasts can be inserted in microunits on previous pages.

Quizz

Quizes / Knowledge Check / Self-Assessment Questions

Unit 1: Introduction to Digital Agriculture & Smart Farming Tools

Which of the following technologies is an example of the Internet of Things (IoT) in farming?
A. A spreadsheet used to track expenses
B. A network of soil-moisture sensors transmitting data
C. A radio announcement about pest outbreaks
D. A mechanical plough
Answer: B

"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
Answer: B

Which category involves drones and satellite imagery to monitor crop health?
A. IoT
B. Remote sensing
C. Robotics
D. Blockchain
Answer: B

The "triple-D" factors refer to:
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
Answer: B

Blockchain technology can help small farmers by:
A. Providing high-speed internet
B. Protecting crop fields against pests
C. Improving traceability of products through a distributed ledger
D. Automating irrigation
Answer: C

Quizz

Quizes / Knowledge Check / Self-Assessment Questions

Unit 2: Digital Record-Keeping for Farm Management

Which of the following is a benefit of using digital record-keeping tools on a farm?
A. They increase paperwork.
B. They lower transaction costs and improve decision-making.
C. They prevent crops from growing.
D. They require no internet access.
Answer: B

Which data fields are typically included in a digital farm record?
A. Crop type, planting date, yield and pest observations.
B. Weather forecast and radio frequencies.
C. Music playlist and television shows.
D. Names of livestock only.
Answer: A

The "triple-D" factors influencing digital tool adoption 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.
Answer: B

Why is cloud storage important for farm record-keeping tools?
A. It keeps data safe, backed up and accessible across devices.
B. It prevents rain from damaging paper notebooks.
C. It removes the need for any devices.
D. It automatically increases crop yields.
Answer: A

Which of these could be a challenge when adopting digital record-keeping tools?
A. Having too many notebooks.
B. Lack of access to smartphones or stable internet connections.
C. Too much free time.
D. Low prices for seeds.
Answer: B

Quizz

Quizes / Knowledge Check / Self-Assessment Questions

Unit 3 – Remote Sensing & Geospatial Analysis (Learner-ready content)

Remote sensing in agriculture refers to:
A. Visiting each field on foot
B. Measuring crop conditions from satellites or drones
C. Digging soil samples by hand
D. Planting seeds at night
Answer: B

NDVI is calculated using which two spectral bands?
A. Blue and green
B. Red and near-infrared
C. Microwave and ultraviolet
D. Infrared and microwave
Answer: B

An NDVI value near zero indicates:
A. Dense green vegetation (e.g., a forest)
B. Bare soil or sparse vegetation
C. Water bodies and clouds
D. Extremely high crop yields
Answer: B

Which digital service provides rainfall data searchable by site and date?
A. NASA Soil Moisture Portal
B. CoCoRaHS network
C. ISU Soil Moisture Network
D. Tabular Weather Forecast
Answer: B

Why compare current NDVI images with historical averages?
A. To predict market prices
B. To identify regions where vegetation is above or below average
C. To measure soil pH
D. To select seed varieties
Answer: B

Quizz

Quizes / Knowledge Check / Self-Assessment Questions

Unit 4 – IoT Sensors & Smart Irrigation

What does "IoT" stand for in agriculture?
A. Internet of Trees
B. Internet of Things — interconnected devices that collect data
C. Internal operational tools
D. International trade organisation
Answer: B

Which variables do IoT sensors commonly measure for irrigation planning?
A. Soil moisture and temperature
B. Crop prices and global markets
C. Harvest time and packaging materials
D. Number of farmers in the region
Answer: A

Why is real-time soil moisture data useful?
A. It tells you when to order seeds
B. It enables precise irrigation, conserving water and reducing waste
C. It determines market prices
D. It fixes broken irrigation pipes
Answer: B

What happens if an IoT irrigation system is automated?
A. It irrigates on a fixed schedule regardless of conditions
B. It shuts down the farm's power
C. It adjusts watering based on sensor readings, freeing farmers for other tasks
D. It harvests crops automatically
Answer: C

Which of the following is a key consideration before installing IoT sensors?
A. Whether the sensors match your favourite colour
B. Availability of reliable internet connectivity
C. The size of your tractor
D. The type of fertiliser you use
Answer: B

Quizz

Quizes / Knowledge Check / Self-Assessment Questions

Unit 5 – Artificial Intelligence & Data Analytics (Learner-ready content)

What does AI do in agricultural decision-making?
A. It removes the need for farmer input entirely.
B. It analyses data to optimise nutrient levels and recommend actions.
C. It increases paperwork and delays decisions.
D. It only predicts market prices.
Answer: B

How can AI assist with pest management?
A. By ignoring visual data and relying solely on weather reports.
B. By analysing satellite or drone imagery to detect signs of disease and pest infestations early.
C. By planting seeds automatically.
D. By replacing all labourers on the farm.
Answer: B

Which of the following is a limitation of AI in farming?
A. It always works regardless of data quality.
B. It can replace local knowledge.
C. Its effectiveness depends on high-quality, localised input data and digital infrastructure.
D. It eliminates the need for sensors.
Answer: C

Why is it important for farmers to maintain their own expertise when using AI tools?
A. AI always provides perfect answers.
B. AI cannot process data from sensors.
C. AI works best when combined with farmers' local knowledge and observation.
D. AI and human knowledge are incompatible.
Answer: C

What might be a barrier to smallholder farmers benefiting from AI technologies?
A. Too much access to precision agriculture.
B. Lack of access to the necessary digital infrastructure and tools.
C. Having high data quality.
D. Good internet connectivity.
Answer: B

Quizz

Quizes / Knowledge Check / Self-Assessment Questions

Unit 6: Data Ethics, Cybersecurity & Sustainability

Multiple-choice quiz

What is the main purpose of the GDPR?
A. To regulate pesticide use
B. To set farming labour standards
C. To protect personal data and ensure privacy
D. To promote agricultural subsidies
Correct answer: C. GDPR protects personal data and ensures it is processed lawfully and fairly.

Which practice is recommended for secure passwords?
A. Using the same password for all accounts
B. Writing your password on a note next to your computer
C. Creating a passphrase of random words and enabling two-factor authentication
D. Sharing passwords with colleagues
Correct answer: C. Strong, unique passphrases with two-factor authentication offer the best protection.

What is 'phishing'?
A. Catching fish using digital tools
B. Converting data into an unreadable format
C. Sending fraudulent emails or messages to steal information
D. Scanning crops with drones
Correct answer: C. Phishing involves fake communications designed to trick you into revealing personal information.

When using a third-party app to collect sensor data, which action is responsible?
A. Allowing the app to collect any data it wants
B. Ignoring software updates because the app works fine
C. Reading and understanding the app's privacy policy before sharing data
D. Using the same weak password for convenience
Correct answer: C. Reviewing privacy policies helps ensure your data is handled responsibly.

Which statement about digital ethics is true?
A. Legally collected data can be used for any purpose without telling anyone.
B. Farmers don't need to worry about digital ethics—only tech companies do.
C. Responsible data use requires consent, transparency and respect for people's rights.
D. Sharing as much data as possible always leads to innovation.
Correct answer: C. Ethical data use means obtaining consent, being transparent and respecting individuals' rights.

Module produced by: Magnetar