FARMER'S PRIDE INTERNATIONAL

Milestone 6

Soil Science and Community Soil Stewardship

Observe, sample, interpret and improve soil with a learning plan



Illustrative learning scene. Image credits are on the references page.

PRACTICAL STUDY MANUAL

Edition 1.0 | 25 October 2026

HOW TO USE THIS MANUAL

Learn, practise, record, improve

Use this practical manual alongside your enrolled lessons and tutor instructions. It supports the milestone theme; it does not replace the complete Academy curriculum.

Work through one lesson at a time. Complete the activity using your own enterprise or the clearly labelled teaching example. Keep dated notes and discuss uncertain technical decisions with a suitable local adviser.

By the end, you should be able to:

- Describe soil condition using observations and field history.

- Prepare a representative sampling plan with laboratory guidance.

- Interpret a report without confusing units or test methods.

- Design a small soil-management comparison and community record.

The self-check is for practice. Your programme's official assessment and certificate requirements remain separate from these exercises.

LESSON 1 OF 6

Observe the soil in its field context

Soil condition varies within a farm. Record slope, drainage, erosion, surface cover, compaction signs, rooting and crop history. Compare healthy and poor areas rather than relying on a single photograph. Keep observations separate from a diagnosis.

Texture, structure, organic matter and water behaviour influence management, but no one observation gives a complete picture. A soil that looks dark is not automatically well balanced, and poor crop growth is not proof of one nutrient deficiency. Combine field history, observations and suitable tests.

Try it in practice

Choose two contrasting locations. Record the same observations at each and list possible explanations that still need checking.

LESSON 2 OF 6

Plan sampling before collecting soil

Ask the laboratory what sample depth, amount, containers, handling and tests are suitable for your purpose and crop. Divide the field into reasonably similar management zones. Do not combine clearly different soils or problem areas into one sample if the difference is the question you are investigating.

Take subsamples consistently within each zone and keep a record of where and when they were collected. Avoid unusual spots unless they are being sampled separately for a specific problem. Clean tools and clear labels help prevent contamination and confusion. Laboratory instructions take priority over a generic classroom routine.

Try it in practice

Draw a sampling map with zone names, planned locations and the laboratory's instructions. Create a sample label and submission record.

LESSON 3 OF 6

Read a soil report carefully

Check that the report belongs to the correct field and date. Note the laboratory method, units and interpretation ranges. Results from different methods are not always directly comparable. Ask for clarification before converting a test value into a fertiliser or amendment decision.

Soil pH is a measure of acidity or alkalinity; it is not the same as nutrient content or a lime requirement. Management recommendations depend on the crop, soil, test method and local conditions. Do not copy a chemical treatment rate from another field. Use qualified local interpretation where an amendment or input decision is needed.

Try it in practice

Annotate a sample report: identify the sample, date, method, units, values, interpretation and unanswered questions. Use a teaching report if your own result is not yet available.

LESSON 4 OF 6

Protect cover, structure and organic matter

Consider practices that reduce erosion, protect soil cover, manage traffic and return suitable organic material. Choose practices that fit the crop, climate, water availability and enterprise. A practice can have trade-offs; for example, residue has competing uses and some organic materials can carry salts, contaminants or pathogens.

Use inputs of known quality and manage them appropriately. Observe whether the chosen practice changes infiltration, rooting, surface condition or crop performance. Do not assume that adding more material always improves soil. Keep records of the amount, source, timing and conditions.

Try it in practice

Choose one soil-protection problem. Propose a feasible practice and list the costs, risks and observations needed to evaluate it.

LESSON 5 OF 6

Use a small comparison to learn

A useful comparison changes one main practice while keeping other conditions as similar as practical. Record the starting conditions and decide how results will be measured. Repeated observations are more informative than one impressive photograph.

Field results can be affected by weather, soil variation, pests and measurement error. Explain these limitations when presenting the outcome. A small comparison supports local learning; it does not prove a universal yield or carbon benefit. Repeat or improve the test when the evidence is uncertain.

Try it in practice

Design a side-by-side comparison. State the question, treatment, comparison, measurements, timing and factors that could confuse the result.

LESSON 6 OF 6

Build a community stewardship record

Agree a small set of indicators the group can measure reliably. Examples include ground cover observations, erosion signs, test results from a consistent method, crop performance and management records. Name the person responsible for each record and explain how farmers can access their own information.

Share results in plain language and identify the next decision. Use maps and photographs with permission, especially when land boundaries or personal information are involved. A community plan should connect practical improvements with responsibilities and review dates rather than rely only on broad environmental promises.

Try it in practice

Create a seasonal stewardship scorecard with three indicators, a baseline, a recording method, an owner and a review date.

WORKED EXAMPLE - ILLUSTRATIVE ONLY

Avoid hiding a problem inside an average

A hypothetical field has an upper slope with visible erosion and a lower area with different drainage. The group wants to investigate why crop growth differs. It has not yet obtained laboratory results.

1. Mark the two areas as separate investigation zones.

2. Record crop history, observations and recent management for each zone.

3. Ask the laboratory for suitable sampling and handling instructions, then label and submit the samples separately.

4. Compare the reports with field observations and obtain appropriate interpretation before choosing an amendment.

What to take into your own plan

Mixing different areas into one sample may conceal the variation you are trying to understand. A diagnosis needs more than an average number.

PRINT AND COMPLETE - WORKSHEET 1

Soil stewardship field worksheet

Name: _____ Date: _____

1. Field, zone, date and crop history

2. Observed cover, roots, drainage and erosion

3. Sampling purpose and laboratory instructions

4. Sample label and collection map

PRINT AND COMPLETE - WORKSHEET 2

Soil stewardship field worksheet

Name: _____ Date: _____

5. Report method, units and interpretation

6. Practice to test and comparison

7. Measurements, dates and evidence

8. Community responsibilities and next review

YOUR NEXT 30 DAYS

Turn learning into a small, useful result

Week 1 - establish the starting point

Complete the worksheet using dated observations and records. Mark facts, estimates and unanswered questions separately.

Week 2 - test one improvement

Choose one feasible action from the lessons. Name an owner, a completion date and the evidence you will collect.

Week 3 - check the result

Compare the result with your starting assumption. Record what changed, what did not and what else may have influenced the outcome.

Week 4 - share and decide

Discuss the evidence with your team. Keep, change or stop the action and record the next step.

Keep an evidence folder: completed worksheets, dated records, relevant photographs, calculations and a short reflection. Use permission before recording or sharing another person's information.

SELF-CHECK

Test your understanding

1. Can a photograph identify a nutrient deficiency with certainty?

2. Why separate sampling zones?

3. Is pH the same as a lime requirement?

4. What makes a comparison useful?

5. What makes a stewardship plan practical?

Write your own answer before reading the next page. Use the lesson activities to explain how you would apply the idea in a real enterprise.

SELF-CHECK ANSWERS

Compare and improve your reasoning

1. Can a photograph identify a nutrient deficiency with certainty?

No. Combine observations, history, suitable testing and competent interpretation.

2. Why separate sampling zones?

Different soils or management areas may need different interpretation.

3. Is pH the same as a lime requirement?

No. Amendment decisions require appropriate tests and local interpretation.

4. What makes a comparison useful?

A clear question, a suitable comparison, consistent measurements and an honest account of other influences.

5. What makes a stewardship plan practical?

Feasible actions, named responsibilities, reliable indicators and review dates.

SOURCES AND IMAGE CREDITS

Continue learning from reliable references

These references support the concepts used in the manual. Follow local requirements, product-specific guidance and the instructions of the relevant laboratory, authority or qualified adviser when applying technical practices.

FAO: Voluntary Guidelines for Sustainable Soil Management

Open reference: www.fao.org

Agriculture Victoria: Sampling soils for soil testing

Open reference: agriculture.vic.gov.au

University of Missouri Extension: Soil analysis

Open reference: extension.missouri.edu

Image credit

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Original teaching examples, activities and worksheets prepared for Farmer's Pride International. Version 1.0, October 2026.