

Soils That Actually Work

A practical guide for farmers and growers.

Foreword

Farming and growing have always depended on what happens in the thin layer of soil that most people never see. For many operations, that layer is now under intense pressure from weather extremes, tight margins, and years of management that were necessary at the time but have left soils tired and less forgiving. The result is familiar: fields that carry less traffic, crops that swing harder between good and bad years, and inputs that no longer deliver the returns they once did.

This booklet was written to make soil decisions simpler, not more complicated. It does not ask you to become a soil scientist or to overhaul your whole system overnight. Instead, it offers a practical way to read your own fields, link tests to reality on the ground, and choose a small number of changes that fit your rotation, your machinery, and your risk tolerance.

If you are a farmer or grower who wants soils that “just work” more of the time—holding water, cycling nutrients, and supporting crops that cope rather than collapse—these pages are for you.

1. Farming on tired soils

Farming today is being asked to do more with less on soils that are often running on fumes. Inputs rise, weather swings harder, and yet too many fields still cap over, pond, burn off, or stall when they should be quietly converting sunlight into grain, forage, and margin. Most farmers already work flat out; spending evenings decoding soil jargon or chasing the latest “biology in a bottle” trend is neither realistic nor fair.

The good news is that the principles needed to turn soils around are well-understood, field-tested, and compatible with commercial reality. Healthy soils protect themselves from erosion, store more water, buffer weather, and convert fertiliser into yield more reliably. The problem is not a lack of information; it is that useful information is buried inside reports, research papers, and sales pitches that rarely translate into a clear plan for your specific fields.

This guide is for farmers and growers who want soils that “just work” again—fields that traffic better, drain better, hold moisture longer, and support crops that cope rather than collapse. It will not teach you everything about soil; instead, it offers a straight, low-jargon framework to read your own fields, decide what to change first, and avoid expensive dead ends.

2. Four realities of farm soils

2.1 Structure runs the show

Most visible problems on farms are structural before they are nutritional. Compaction layers, smeared seedbeds, and capped surfaces restrict roots, water, and gas exchange, no matter how well the soil scores on a lab sheet. When pores are blocked, fertiliser and biology are working in handcuffs; air and water cannot move, so roots and microbes cannot either. Reading structure with a spade and boot—depth of friability, how clods break, where roots stop—is often the fastest way to find the real constraint.

2.2 Organic matter and biology are the engine

Soil organic matter and the biology it feeds sit at the heart of resilience and nutrient cycling. Even modest increases in organic matter can improve water holding, aggregate stability, and nutrient efficiency in ways that spreadsheets often under-value. Biology responds to habitat: continuous cover, living roots, minimal disturbance, and diverse residues give microbes and soil fauna what they need to build crumb structure and humus. When biology is starved, the system leans harder on purchased inputs, and variability between good and bad years becomes more brutal.

2.3 Nutrient balance beats sheer quantity

Many fields have “enough” NPK on paper but still underperform because the ratios and forms are off. Skewed calcium, magnesium, potassium, or sodium levels change how soil crumbs form and how roots and microbes access nutrients, even at similar total levels. Focusing on balance—bringing key cations, pH, and salinity into workable ranges—often unlocks structure and biology at the same time as yield. The art lies in deciding what to correct now, what to watch, and where further application is simply feeding loss pathways.

2.4 Water is both limit and opportunity

Too wet, too dry, wrong place, wrong time: water problems often trace back to structure, cover, and rooting depth. Fields with good aggregate stability and continuous rooting tolerate heavy rain and dry spells better because they infiltrate, store, and release water more intelligently. Managing traffic, residue, covers, and rotations for water handling—rather than only for labour or weed control—changes how crops experience the whole season, not just a single weather event.

3. From tests to decisions: a simple framework

Soil tests, field walks, and yield maps can either become a confusing pile of data or a clear to-do list. The difference is having a simple framework that turns observations into 3–5 decisions per field, not 30 conflicting suggestions. The aim is not to chase perfect numbers, but to identify the few changes most likely to move your bottlenecks.

A practical three-step loop for farmers and growers:

1. **Read the field, not just the lab**

Before opening any report, walk the field with a spade. Note where machines sink or bounce, where crops thin, lodge, or change colour, where water stands or runs off. Dig a few holes across good and poor patches; compare rooting depth, smell, crumb structure, earthworm activity, and any grey, blue, or orange mottling that hints at drainage issues. This “ground truth” tells you which lab numbers actually matter for management this year.

2. **Sort results into “now, soon, later”**

When you look at soil tests—fertility, biology, or health scores—resist the urge to fix everything. Group issues into:

- **Now:** constraints that are actively costing yield or creating risk (e.g. very low pH, extreme compaction, salinity, or a clear deficiency).
- **Soon:** issues that are not yet critical but will limit you in 2–5 years if ignored (e.g. declining organic matter, borderline K or P, poor aggregate stability).
- **Later:** numbers to watch while other changes take effect (e.g. micronutrient tweaks that depend on pH and biology improving first). This prevents over-correcting minor issues while real bottlenecks remain untouched.

3. **Pick a small number of linked actions**

For each field, choose one to three actions that support each other, rather than a long shopping list. For example:

- If structure and water are the big issues: adjust traffic patterns, add a deep-rooting cover in the rotation, and reduce risky tillage passes in marginal conditions.
 - If nutrient balance is skewed: target lime or gypsum to specific fields and depths rather than blanket applications, and match fertiliser forms and timings to realistic yield goals.
 - If biology and organic matter are low: keep cover on between cash crops where possible, return more residues, and time any cultivation to protect emerging roots and soil life.
4. The question to ask is: *“What can be done in this rotation, with this kit, that improves structure, biology, and balance at the same time?”* Short lists are more likely to get done, measured, and refined.

4. Three short farm snapshots

These sketches are simplified, but they illustrate how the framework works on real farms.

4.1 Mixed farm – heavy land that never dries

A mixed farm on heavier clays struggles with spring traffic, patchy cereals, and surface ponding after moderate rain. Soil tests show reasonable P and K, slightly low pH, and high magnesium; spade work reveals dense layers at working depth, few roots below 15–20 cm, and smeared seedbeds.

Actions:

- Switch some cultivations to drier windows and shallower passes where possible.
- Introduce a deep-rooting cover mix ahead of spring crops to punch more pores.
- Start a targeted liming/gypsum programme on fields with the poorest structure.

Within a few seasons, fields carry machines better, water stands for less time, and cereal establishment improves without major changes in fertiliser spend.

4.2 Vegetable grower – high inputs, fragile structure

A vegetable grower on lighter soils has good yields but increasing issues with crusting, wind erosion, and erratic crop response. Frequent tillage and bare periods leave soils exposed; tests show acceptable nutrients but low organic matter and poor aggregate stability.

Actions:

- Reduce unnecessary passes and swap some operations for lighter tools.
- Use quick, high-biomass covers between crops wherever the calendar allows.
- Apply composts or well-managed manures to key fields, prioritising those with worst structure.

Over time, surfaces crust less, irrigation holds better, and inputs buy more consistent performance instead of swinging returns.

4.3 Arable farm – flat yields despite fertiliser

An arable farm sees yield plateaus despite keeping fertiliser at or above local recommendations. Tests show good overall nutrient levels but low calcium relative to magnesium, variable pH, and a history of heavy machinery on wet ground.

Actions:

- Re-zone fields based on soil type and history; sample and manage them separately.
- Use gypsum or lime strategically on fields with worst ratios and structure problems.
- Introduce at least one cover or break crop aimed at rooting and residue diversity.

Within a few rotations, yield maps show smoother performance across fields, and the farm begins to trim back some fertiliser rates while holding or improving output.

5. A 10-minute soil walk checklist

This quick field check is designed for busy seasons. Take a spade, knife, and notebook; aim for three spots in each representative area.

On each stop, note:

- **Surface cover:** Is there living cover or residue, or are you looking at bare soil?
- **Crusting and capping:** Are there hard crusts, sealed surfaces, or obvious splash marks?
- **Ponding and infiltration:** After rain, how long does water sit? Are there visible run-off paths?
- **Rooting depth:** How deep do crop and weed roots actually go before they kink, stop, or change direction?
- **Soil structure:** Do aggregates break into crumbs, plates, or blocks? Is there a clear “pan” at a certain depth?
- **Smell and colour:** Does the soil smell earthy or stale? Are there grey, blue, or rusty mottles suggesting poor aeration or fluctuating water tables?
- **Life:** Do you see earthworms, fine roots, fungal threads, or is the profile relatively dead?

Use these observations to decide which fields deserve immediate attention and to interpret lab results in context.[youtube](https://www.youtube.com/watch?v=...)

6. Next steps and how 59degrees helps

Improving soil is not about buying the perfect product; it is about making a series of good, connected decisions that fit your rotation, climate, and machinery. Most farms already have some of the pieces in place—what is often missing is the confidence to prioritise and the reassurance that changes will pay their way.



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59degrees works with farmers and growers to turn soil tests, field walks, and yield history into a practical, season-by-season plan. That might mean refining a rotation, targeting amendments, designing cover crop strategies, or troubleshooting specific problem blocks, always with an eye on both biology and the bottom line. If you want help reading your own fields through this framework, you can share a short summary of your soils, current challenges, and goals, and explore whether a focused soil review or longer-term support is the right fit.

Closing Notes

Healthy soil is not a destination; it is the result of hundreds of management decisions made over seasons and years. The encouraging part is that many of those decisions are already in your hands—how you move across a field, how often you disturb the soil, what you leave on the surface, and which crops or covers you weave into the rotation. Small, well-chosen changes can compound into fields that are easier to manage, more resilient to weather, and more profitable to farm.

If this guide has helped you see your soils a little more clearly, the next step is to apply the ideas to one real field—walk it, dig it, review the numbers, and choose a short list of actions you can take in the coming season. If you would like support in that process, 59degrees works with farmers and growers to turn scattered observations and lab reports into a focused plan tailored to your land. You can share a few details about your soils and goals, and explore whether a soil review or longer-term support is the right fit for you.