



# Gamechangers for improving global soil health

Coalition of Action for Soil Health (CA4SH) policy paper

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## Setting the context: the global state of soils

- Soils are vital for the production of 95% of the world's food<sup>i</sup>
- Healthy soils provide multiple critical ecosystem services for modern human society<sup>ii</sup>
- At least one-sixth of the world's land area is degraded<sup>iii</sup>, with some estimates reaching 40%<sup>iv</sup>
- Almost 600 million people are projected to be chronically undernourished in 2030<sup>v</sup>
- With the population growing to 10 billion people by 2050, agricultural production must increase by over 50%<sup>vi</sup>

## Understanding the complexity of soil health

Because the soils and the ways we interact with them are so diverse, **there is no universally agreed, single definition of soil health**. What matters most is the overall condition and quality of a soil, involving the physical, chemical, and biological characteristics that define its capacity to function as a vital living ecosystem that sustains plants, animals, microbes, and humans.

Each component – from the farmers to the crops, to the soil microbiome and their interactions – influences how a healthy soil system is defined in a specific ecological and socioeconomic setting. **Assessing, protecting, and improving soil health requires site-specific considerations.**

## The policy challenge of improving global soil health

Soil health underpins the sustainability of our food systems and society as a whole. As the foundation of agriculture, soils are invaluable, yet they are facing degradation at an alarming rate primarily due to poor agricultural practices and incentives. The situation is only expected to worsen with increasing climate change impacts, such as more frequent floods which erode soils and droughts that reduce vital soil microbial activities.

The unique challenge we face is to find ways to improve and protect global soil health, while at the same time:

- 1) promoting sustainable agricultural production and increasing yields for a growing world population;
- 2) achieving universal food security;
- 3) supporting rural livelihoods and human well-being;
- 4) adapting to and mitigating climate change.



Farmers are often unfairly expected to face the brunt of these challenges. To help them, companies serving them are committed to working with the governments, advisory bodies, non-government organizations and universities to ensure that farmers and others who manage land have access to technical resources, knowledge and products to farm well.

Policymakers play a crucial role in supporting these efforts by including soil health more prominently into existing legal frameworks.

To help them in this complex task, the private sector group of CA4SH has identified three game-changing solutions that can make lasting improvements to soil health globally. If targeted by policymakers at any geographic scale, the solutions below can help address persistent barriers, and unlock new approaches to improving soil health in the long term.

Each of these solutions enable other important contributing factors to soil health - an improvement of Nutrient Use Efficiency (NUE), better water management, the implementation and optimization of regenerative practices, and the increase of soil organic matter – to name just a few.

## Three game-changers for global soil health:

### ACCESS TO EQUIPMENT & TECHNOLOGY

Farmers cannot implement practices that improve or preserve soil health without the necessary farming equipment during land preparation, planting, fertilization, crop care and harvest. In particular, for small-scale farmers, equipment and technologies are often unavailable or inaccessible if their costs are too high. In many countries, smallholder farmers face obstacles in implementing regenerative agronomic practices – for instance, by facing limited access to energy. These barriers can be overcome with suitable infrastructure, mechanization, and government-supported access to finance projects.

The right tools and techniques already exist. By breaking down barriers of equipment use, especially during the ‘early adopter’ phase, the potential for widespread adoption could lead to increased demand and even cost reductions.

**Policymakers can support private-private partnerships which result in trained regional experts/operators for equipment use and maintenance support, expanded rental opportunities, bulk/group purchase schemes, more attractive lease rates, and equipment and cost-sharing through co-operatives.**

### INCLUSION IN AGRIFOOD SYSTEMS AND VALUE CHAINS

There is significant potential for soil health to be embedded in agrifood supply and value chains through appropriate science-based metrics and targets. Current agrifood sustainability standards are limited in impact and vary in uptake by crop types. Existing standards use metrics that are often



inconsistent and sometimes less than suitable for farmer’s conditions. They often do not capture the complexities of soil health and therefore fail to deliver the intended benefits.

With more emphasis on the purpose of the agricultural system for national nutrition goals, economic growth, local markets and export destinations, a systematic inclusion of site-specific soil health metrics can create positive changes in the agri-food systems, with verifiable, tangible results.

**Policymakers can support the definition of national, purpose-driven standards for the agrifood supply chains and encourage the systematic inclusion of soil health metrics into various reporting tools. Governments can also ensure that existing standards comprise, at a minimum, specific metrics for soil organic matter, soil erosion, and soil nutrient balances. This tool would have a measurable, long-lasting effect on the food systems transformation.**

## **ACTIONABLE DATA**

As soil health depends largely on site-specific factors, so do the practices that can improve soil health. Promoting generic soil management standards and practices can create a disconnect between policymakers and the farmers expected to implement them. Before soil health targets are set for a specific location, there must be an effort to measure, aggregate, and analyze data on the needs, constraints, and realities of that unit of coverage for the intended policy.

**Policymakers can support soil health monitoring programs on the farm to track the impact of interventions over time. Governments can provide incentives to farmers to help gather relevant data. Governments can further contribute to enhance the role of universities and research stations to guarantee the validity and correct interpretation of the findings. Last but not least, private-sector-driven data collection and knowledge management programs should be more broadly recognized, as they complement the work of public sector scientists and government advisers.**

## **TAKEAWAYS**

Numerous ways to promote soil health have been proposed over the years as policy recommendations. Despite this, farmers still face barriers, the state of soils globally has not improved, and existing policy action are deemed insufficient.

The three solutions listed above provide a pathway to break down these barriers and promote the rapid uptake of appropriate and sustainable soil management practices. Policymakers should focus their efforts on: (i) ensuring farmers in low soil health areas have access to the right equipment and technology, (ii) including soil health in national agricultural systems and in the agrifood value chains to empower both producers and consumers in taking action, and (iii) promoting a better use of site-specific science-based soil health data.



Ultimately, by **embedding site-specific, science-based considerations into soil health discussions** current barriers can be overcome, and meaningful progress can be achieved to improve global soil health.

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<sup>i</sup> FAO, 2022. Soils for nutrition: state of the art. Rome. <https://doi.org/10.4060/cc0900en>

<sup>ii</sup> FAO and ITPS. 2015. Status of the World's Soil Resources (SWSR) – Main Report. Food and Agriculture Organization of the United Nations and Intergovernmental Technical Panel on Soils, Rome, Italy

<sup>iii</sup> Data from multiple sources compiled by the UN – processed by Our World in Data. “15.3.1 - Proportion of land that is degraded over total land area (%) - AG\_LND\_DGRD” [dataset]. Data from multiple sources compiled by the UN [original data].

<sup>iv</sup> United Nations Convention to Combat Desertification, 2022. The Global Land Outlook, second edition. UNCCD, Bonn

<sup>v</sup> FAO, IFAD, UNICEF, WFP and WHO. 2023. The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural–urban continuum. Rome, FAO. <https://doi.org/10.4060/cc3017en>

<sup>vi</sup> Searchinger, T., Waite, R., Hanson, C., Ranganathan, J., Dumas, P., Matthews, E., & Klirs, C. (2019). Creating a sustainable food future: A menu of solutions to feed nearly 10 billion people by 2050. Final report.