

GOVERNANCE AND POLICY SKILLS

- Political Analysis and Interpretation
- Ethical Decision-making

INNOVATION AND PROBLEM-SOLVING SKILLS

- Critical Thinking / Problem-solving
- Cooperation and Collaboration

SOCIAL AND COLLABORATIVE SKILLS

- Community Engagement
- Active Listening
- Cooperation and Collaboration

TECHNICAL AND DIGITAL SKILLS

- Tools for Soil-related Data Collection and Analysis
- Working with Specific Data, Geographic Tools and Remote Sensing

SOIL HEALTH COMPETENCY MAP

IDENTIFIED AND PRIORITISED SKILLS NEEDED: SUMMARY

ENTREPRENEURIAL AND BUSINESS SKILLS

- Resilience in Business & Learning from Mistakes
- Systemic Thinking
- Leadership

EU-GREEN COMPETENCIES

- Knowledge of EU Regulations and Funds
- Understanding Soil in Terms of Its Ecosystem Functions

HANDS-ON FIELD-BASED SECTOR SKILLS

- Field Operations and Farming Techniques
- Environmental Observation
- Outdoor Learning Environments

Governance and Policy Skills

- **Political analysis and interpretation**

Understanding the political and economic landscape surrounding soil governance helps practitioners anticipate regulatory changes and contribute to shaping sustainable land management policy. Students emphasise the need to critically analyse how political decisions affect soil, forecast future policy impacts, and engage proactively in decision-making spaces. This includes linking personal and professional actions to broader regulatory dynamics and developing skills to navigate, question, and influence soil-related policies.

- **Ethical decision-making**

Decisions about soil often involve trade-offs between productivity, conservation, and social equity. Ethical decision making promotes responsibility, fairness, and long-term thinking, acknowledging soil as a shared resource that is slow to regenerate and vulnerable to degradation. Students highlight the need for moral reasoning when balancing competing land uses and ensuring transparent communication with communities.

Innovation and Problem-Solving Skills

- **Critical thinking / Problem solving**

Soil-related challenges are complex and often interlinked with social, environmental, and economic issues. Critical thinking involves evaluating such complexity and identifying cause-effect relationships. Students stress the importance of applying systems thinking, reflective analysis, and creative problem-solving to devise locally relevant, transformative solutions.

- **Cooperation and Collaboration**

Addressing soil challenges requires interdisciplinary teamwork, cross-sectoral collaboration, and international exchange. Students value cooperation as essential for integrating diverse forms of knowledge, fostering shared ownership, and implementing joint projects, ranging from school gardens to regional and transnational partnerships. Collaboration is also seen as key to unlocking innovation, building mutual understanding across borders, and strengthening community-rooted action.



Social and Collaborative Skills

- **Community engagement**

Local communities are key stakeholders in soil management. Engaging communities ensures that soil health strategies are inclusive, locally grounded, and enriched by cultural, ancestral, and practical knowledge. Students emphasise participatory methods and skills in negotiation and facilitation as part of this competency.

- **Active listening**

Listening attentively to farmers, citizens, and other stakeholders builds trust and helps co-create solutions rooted in local experience. With growing digitalisation, students also highlight the importance of active listening in both online and face-to-face interactions, recognising it as a foundation for empathy and meaningful dialogue.

- **Cooperation and Collaboration**

As highlighted in the innovation category, this competency reinforces the need for network-building, cross-disciplinary teamwork, and sustained partnerships that bridge sectors and societal levels.

Technical and Digital Skills

- **Tools for soil-related data collection and analysis**

Competency in digital and hands-on data techniques, such as soil sampling, laboratory analysis, environmental modelling, and AI-supported assessments, enables evidence-based decision-making. Students call for more exposure to these tools, especially in practical teaching settings where real data can be created, processed, and published.

- **Working with geographic tools and remote sensing**

Skills in GIS, remote sensing, and spatial data analysis are essential for mapping soil fertility, assessing land use changes, and supporting landscape-scale planning. Students emphasise the value of working with specific geographic tools and technologies, including meteorological data and classification systems as part of a comprehensive approach to soil monitoring. These tools are not only seen as technically powerful, but also as a gateway to deeper field-based observation and outdoor learning.



Entrepreneurial and Business Skills

- **Resilience in business, learning from mistakes**

Soil restoration and agroecological entrepreneurship involve risk. Students note that resilience, especially when rooted in sustainable and regenerative practices, helps professionals adapt, reflect, and reorient after challenges. This competency is linked to persistence, innovation, and strategic thinking in uncertain contexts.

- **Systemic thinking**

This involves understanding how soil interacts with water cycles, biodiversity, farming systems, and socio-economic dynamics. Systemic thinking helps avoid unintended consequences and supports the design of integrated, sustainable solutions. Students repeatedly link this skill with justice, equity, and long-term sustainability.

- **Leadership**

Leadership in the context of soil health means mobilising others, making informed decisions, and fostering a culture of collaboration. Whether on a farm, in a classroom, or in a municipality, effective leaders guide change while empowering their communities to take ownership of soil stewardship.

EU-Green Competencies

- **Knowledge of EU regulations and funds**

Understanding policy instruments like the European Green Deal, the Common Agricultural Policy (CAP), and Horizon Europe is key to securing funding, aligning with EU goals, and scaling sustainable practices. Students see this as a strategic skill for shaping and accessing support for soil-related initiatives.

- **Understanding soil in its ecosystem functions**

Healthy soils underpin biodiversity, water regulation, food security, and carbon storage. Recognising soil as a vital component of Earth's life-support systems, not just a resource for agriculture, is seen as foundational. Students also tie this to a sense of political agency and the urgency to act for intergenerational justice.



Hands-On Field-Based Sector Skills

- **Field operations and farming techniques**

Competence in practices such as no-till farming, cover cropping, composting, and erosion control is crucial for practical soil improvement. Students consistently call for more field-based teaching to understand how such techniques affect real-world conditions.

- **Environmental observation**

The ability to interpret soil characteristics, plant health, and landscape dynamics through direct observation supports early diagnosis and adaptive management. Students view this skill as essential for developing practical intuition, situational awareness, and a deeper connection to real-world environmental conditions.

- **Outdoor learning environments**

Engaging with soil directly in natural or real-world settings enhances learning in ways that classroom-based instruction alone cannot. Students highlighted the value of field-based experiences, such as field trips, community gardens, and site visits, as transformative opportunities to develop practical skills, critical thinking, and a deeper, embodied understanding of soil systems.

