

# LOOK INTO THE SOIL TO UNDERSTAND THE BENEFITS OF NBS FOR SOIL

## Summary

Soil profile investigation is a powerful demonstration method to visualize the impact of Nature-Based Solutions (NBS) such as no/min-till farming, and manure application and cover crops on soil structure. By examining soil layers, farmers can empirically observe improvements and better understand the benefits of sustainable agricultural practices.

## The need

Soil profile demonstrations are essential because soil remains a "black box" for many farmers. While the benefits of NBS solutions exist, they are often hidden beneath the surface. Through soil profile analysis, we can make these advantages visible, offering farmers tangible proof that adopting sustainable practices improves soil health and fertility. By digging into the soil, we can clearly show the effects of different management techniques, making it easier for farmers to see and believe in the changes happening beneath their feet. Farmers often rely on surface indicators to gauge soil health, but these can be misleading. A soil profile investigation allows them to observe firsthand how sustainable practices enhance root development, microbial activity, and soil aggregation. With this approach, we transform abstract scientific concepts into practical, observable benefits. By making the invisible visible, we empower farmers with knowledge that drives informed decision-making and long-term sustainability.

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## The benefits

Empirical understanding is key to changing farming practices. A soil profile demonstration provides undeniable visual evidence of soil improvements, such as enhanced soil structure, increased organic matter, and better water retention. Farmers can see firsthand how cover crops, reduced tillage, and organic amendments like manure contribute to healthier soil.

Many of these positive changes are not immediately visible from the surface, making it crucial to look deeper into the soil. By showcasing real results, we help bridge the gap between scientific knowledge and practical farming, ensuring that farmers gain trust in NBS solutions and integrate them into their daily work.

Demonstrations reveal differences in soil porosity, root penetration, and biological activity, reinforcing the connection between management choices and soil quality. Farmers witnessing these changes become more confident in adopting and maintaining NBS practices.

Additionally, soil profile investigations facilitate knowledge-sharing among farmers, fostering a collaborative approach to regenerative agriculture. When farmers can visually assess the long-term benefits of NBS, they are more likely to make informed decisions that benefit both their land and productivity. Ultimately, these insights drive the transition toward more resilient and sustainable farming systems.



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## trans4num solution

As part of a trans4num event, we conducted soil profile investigations to highlight the differences within fields. By digging soil pits, we revealed variations in soil composition—one area showed a gravel layer while another displayed a rich, humus-laden topsoil. These contrasts underscore the need for site-specific soil management. By engaging farmers in this hands-on demonstration, we made the results of NBS solutions tangible, helping participants understand the impact of sustainable farming practices on soil health.

Through this experience, they gained insights into how their soil evolves when they apply NBS, reinforcing their commitment to regenerative agriculture. Farmers observed firsthand how different practices influence soil stability, root growth, and moisture retention. These observations strengthen their confidence in sustainable strategies, encouraging them to implement site-adapted NBS approaches.

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By connecting soil characteristics with management history, we empower farmers to refine their techniques for optimal results. Trans4num events foster a dynamic exchange of knowledge, where real-world evidence supports the widespread adoption of regenerative farming.



### What were the challenges / limitations in the implementation process?

- Implementing soil profile demonstrations can be difficult due to weather conditions like heavy rain or drought, which hinder accurate analysis. Timing is crucial, as farmers are busy during peak seasons. Engagement is also a challenge, requiring strong communication and clear evidence of benefits to gain farmers' interest.



### What kind of resources do you need to implement the proposed solution?

- Successful implementation requires good planning to ensure the right timing and location.
- Strong networks with farmers, advisors, and agronomists support knowledge-sharing.
- Expertise and proper equipment are essential, as soil scientists help interpret results and provide valuable recommendations for farmers.

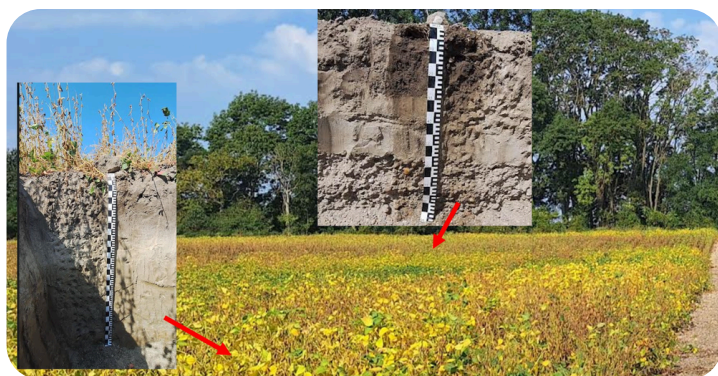


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## More information

- [trans4num NBS site in Hungary](#)
- [Soil section demonstration in Kimle](#)



Learn more about the project at <https://trans4num.eu/en/>

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