ProbeField - A novel protocol for robust in field monitoring of carbon stocks and soil fertility based on proximal sensors and existing soil spectral libraries

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Project start: November 2021
Duration: 36 months
Coordinator: Bo Stenberg (SLU, Sweden)
14 partners in 12 countries with varying kinds of soil spectral libaries (Figure 1)
Aim: Quick and simple soil analyses directly in the field through proximal sensing (visible and near infrared (vis-NIRS), 400-2500nm) (Figure 2)
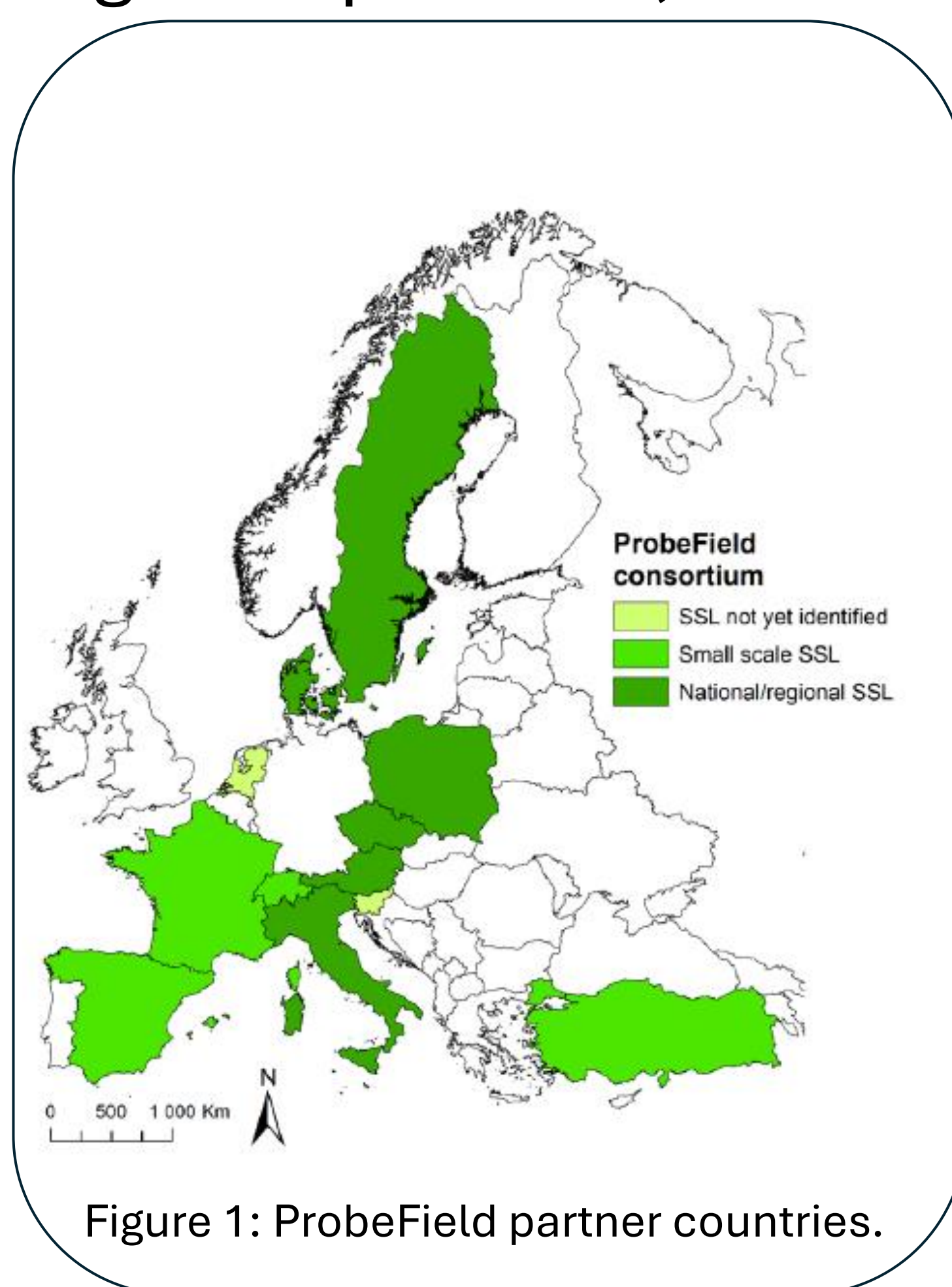

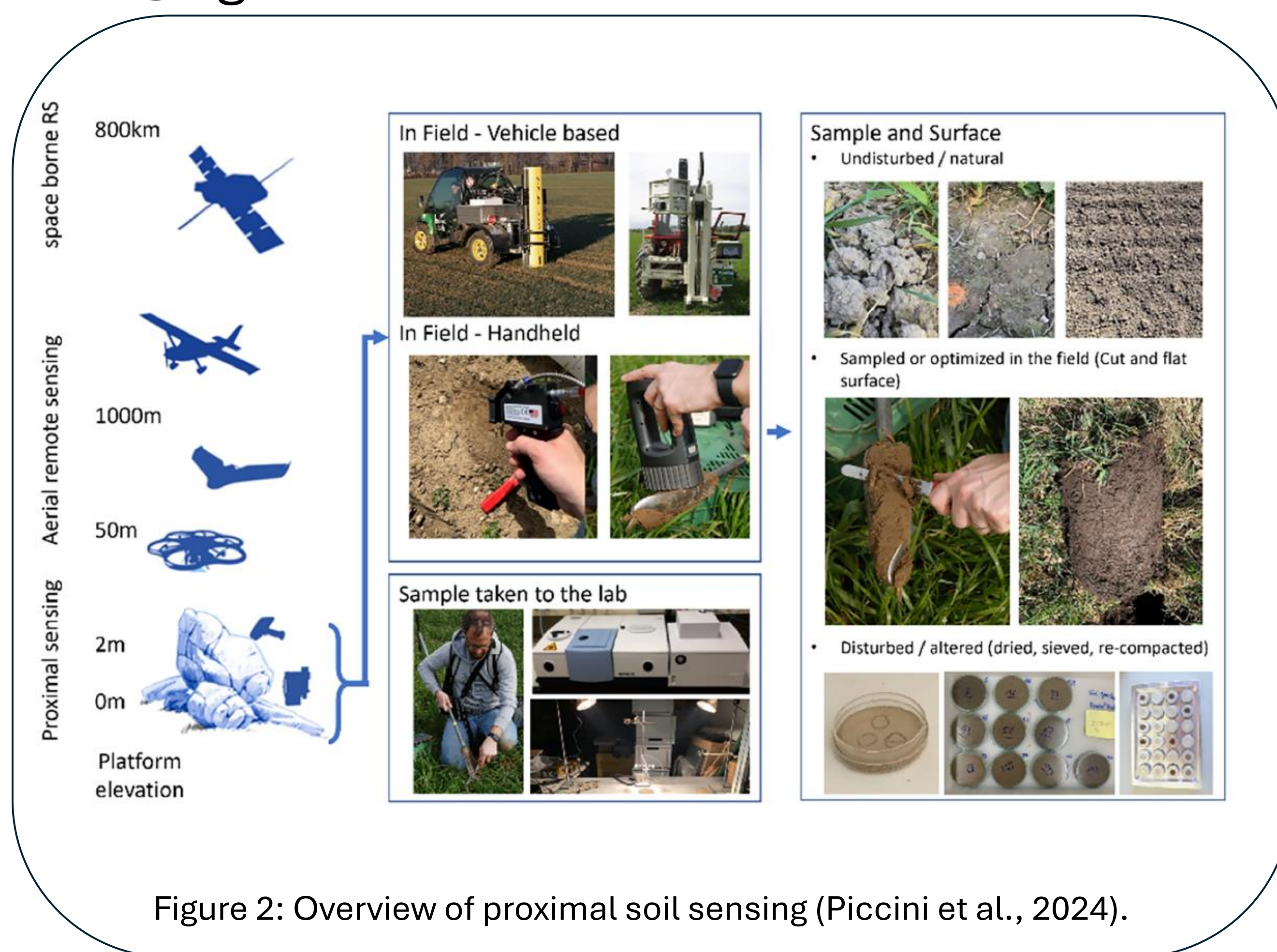Figure 1: ProbeField partner countries.

Figure 2: Overview of proximal soil sensing (Piccini et al., 2024).

Activities in Austria
- Investigation on available soil spectral methods (T2.1, Figure 3, Piccini et al., 2024)
- The build-up of the Austrian Soil Spectral Libary at AGES (T2.2)
- Testing of the ProbeField field protocol at the AGES tillage trial in Fuchsenbigl (WP2 & WP3, in cooperations with HBLFA Raumberg-Gumpenstein, Figure 4)
- Workshop „NIRS in different cropping systems" in Poland in May 2024 (T2.5)

Publications in Austria
- MSc thesis by Magdalena Bieber „VisNIR spectroscopy of agricultural soils for assessing carbon fractions and management practices" November 2023
- Puccini et al., 2024 In-field soil spectroscopy in Vis–NIR range for fast and reliable soil analysis: A review. Eur J Soil Sci. 2024;75:e13481. https://doi.org/10.1111/ejss.13481
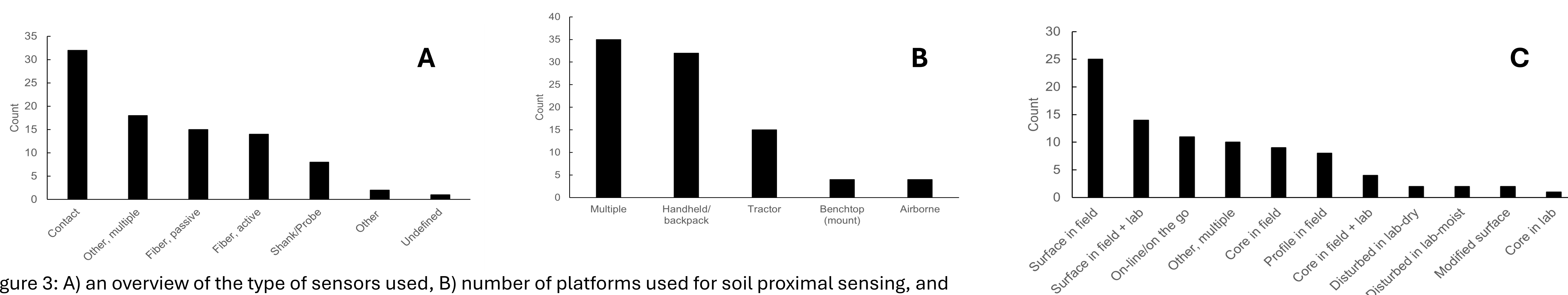

Figure 3: A) an overview of the type of sensors used, B) number of platforms used for soil proximal sensing, and C) soil scanning approaches (Piccini et al., 2024).

Figure 4: Testing of the ProbeField field protocol at the AGES tillage trial in Fuchsenbigl in July 2023.