



CARBON FARMING MONITORING STRATEGY ROADMAP



	VISUAL SOIL ASSESSEMENT	SOIL CARBON STOCKS	ENZYME ACTIVITIES & SOIL QUALITY INDEX
FINAL USERS	Farmers and students	Farmers, agronomists, field technicians	Independent audits, researchers
INFORMATION PROVIDED	Soil quality based on crop performance and key soil condition related to soil organic carbon (SOC) storage capacity.	Current soil carbon (C) storage.	Soil functionality in relation to C and nitrogen (N) cycles.
ADVANTAGES	<ul style="list-style-type: none"> • User-friendly application, worldwide recognized with existing reference values. • Independently from carbon farming techniques, it provides information on SOC storage capacity. • Both soil and plant parameters are considered. 	<ul style="list-style-type: none"> • Based on a limited set of determination (C content and bulk density). • It is easy to understand for a large audit. 	<ul style="list-style-type: none"> • Provide very short-term (monthly) information. • Biochemical parameters that respond rapidly to changes in soil management and directly reflect the soil functionality, quality and health.
DISAVANTAGES	<ul style="list-style-type: none"> • Seasonal climatic condition could change soil status (i.e., moisture affects earthworm content and soil colour). • No information on the quality of the C stored. • Additional data on nutrient cycles are needed to assess soil health. 	<ul style="list-style-type: none"> • Bulk density often missing in dataset and pedotransfer function application may require the intervention of a specialist. • SOC can change very slowly. • No information on the quality of the C stored. • Additional data on nutrient cycles are needed to assess soil health. 	<ul style="list-style-type: none"> • Parameters determination requires specialized laboratory, equipment and technicians. • Results interpretation is not always easy and cannot be easily shared between different types of audit.
LINKS WITH OTHER INDICATORS	Root mass; C stock.	C stock; Yield; Microbial biomass.	C stock (not generalizable to all the carbon farming techniques); Microbial biomass content and activity.
REFERENCES	<ul style="list-style-type: none"> • FAO, 2008. <i>Visual Soil Assessment</i> • https://www.fao.org/3/i0007e/i0007e.pdf 	<ul style="list-style-type: none"> • De Vos et al., 2005. <i>Soil Sci. Soc. Am. J.</i> 69. • Wiesmeier et al., 2012. <i>Global Change Biol</i> 18. 	<ul style="list-style-type: none"> • Andrews & Carroll, 2001. <i>Ecol. Appl.</i> 11. • Andrews et al., 2004. <i>Soil Sci. Soc. Am. J</i> 68. • Mazzon et al., 2021. <i>Agric. Ecosyst. Environ.</i>

