

Table 1 Comparative analysis of methods for smallholder quantification of SOC stocks and changes with regard to level of accuracy, scale, resources demanded, and land covers considered

Method / Quantification Approach	Accuracy and precision		Scale		Resources demanded				Land covers considered				
	Uncertainty given	Widely tested/used	Landscape	Farm /paddock	Cost	Specialist expertise	Specialist equipment	Landscape stratification for sampling	Cropland	Rangeland/ grazing Land	Grassland	Agroforestry	Woodland
a) Methods specifically designed for SOC quantification													
A protocol for modeling, measurement and monitoring soil carbon stocks in agricultural landscapes. Aynekulu et al. (2011)	x	x	x	a	MH	M	LM		x		x	x	x
VCS Module VMD0021 Estimation of Stocks in the soil carbon pool	x		x	x	H	MH	MH	x	x	x	x	x	x
Sampling, measurement and analytical protocols for carbon estimation in soil, litter and coarse woody debris. McKenzie et al. (2000)	x	x	x	x	M	M	M	x	x	x	x	x	x
Soil testing protocols at the paddock scale for contracts and audits – Market-based instrument for soil carbon. Murphy et al. (2013)	x		x	b	LM	M	M	x		x	x		
b) Methods considering SOC as part of whole ecosystem carbon quantification													
Measuring Carbon Stocks Across Land Use Systems (ICRAF). Hairiah et al. (2010)	x	x	x	x	LMH	LMH	LMH	x	x		x	x	x
Guide to Monitoring Carbon Storage in Forestry and Agroforestry Projects. MacDicken (1997)	x	x	x		LM	LM	LM	x				x	x
GOFC-GOLD (2009)	x		x		MH	MH	MH						x
Forest Carbon Stock Measurement: Guidelines for Measuring Carbon Stocks in Community-Managed Forests. Subedi et al. (2010)	x		x		M	M	M	x				x	x
Small-Holder Agriculture Monitoring and Baseline Assessment (SHAMBA) methodology. Berry et al. (2012)	x		c	x	LM	M	M	d	x			x	
Integrating Carbon Benefits into GEF Projects. Pearson et al. (2005)	x	x	x	x	M	MH	MH	?	x	x	x	x	x
Carbon Inventory Methods. Ravindranath and Ostwald (2008)	x		x		LMH	MH	MH	?	x		x	x	x

Notes: LMH (low, medium, high) ^a If remote sensing available; ^b Specifically designed for paddock (generally an extensive rangeland); ^c Not designed for sites with signs of significant erosion; ^d only areas with climate smart agricultural activities considered.