



## **Adopting a modified pressure calcimeter with temperature compensation for testing total carbonates in soils**

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The total carbonates content of the soil is an important soil quality indicator highly related with soil carbon sequestration and a tool for understanding biogeochemical processes or liming practices. A portable digital pressure calcimeter with multisensory technology was used in order to test total carbonates in soil samples. The concept of the measurement is based on the simultaneous measurement of pressure and temperature after the sample reaction with hydrochloric acid in a closed vessel and a built-in module for automatic temperature compensation, so that performs measurements with higher accuracy. For these purposes two stages of analysis followed in order to document the precision of the methodology: (i) Total carbonates testing in Sand/CaCO<sub>3</sub> mixtures and (ii) Total carbonates testing in soil samples. The instrument has a typical mean error of  $\pm 0.3\%$  calcium carbonates content of the soil sample and a recovery more than 98% comparing to certified inter-laboratory soil samples (proficiency tests) for quality assurance. The methodology adopts portable capabilities with soil moisture correction in situ, providing to the end-user the advantages of automatic analysis, fast testing operation, fast re-samples for analysis and productivity.