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an evaluation of techniques for root observations

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An evaluation of techniques for root observations

Below-ground processes play an essential role in ecosystem nutrient cycling and the global carbon budget (C) cycle because they regulate storage of large quantities of carbon. Quantifying root dynamics, that is, production, longevity, mortality and decomposition, is crucial to the understanding of ecosystem structure and function, and in predicting how ecosystems respond to climate variability. The necessity for accumulating information about root system growth is thus clear. However, we have a relatively poor understanding of the best method of observation, especially in the natural soil environment. The objective of this study is to compare four techniques of root observation, that is, manual scanner, smartphone scanner, flatbed scanner and classical observations, for determining the best technique. Root growth dynamics were measured in Rhizotrons. The project involves several field-sites situated in agroforests comprising hybrid walnut trees and pasture/crops along a climatic gradient in France. The results of this project will provide data allowing researchers to facilitate the choice of the most suitable observation method for their research.