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SOIL QUALITY EVALUATION UNDER AGRO-SILVO-PASTORAL MEDITERRANEAN MANAGEMENT SYSTEMS

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According to Franzluebber (2002) the degree of stratification of soil organic C and N, as well as other parameters, with soil depth, expressed as a ratio, can indicate soil quality or soil ecosystem functioning and sustainability under different agricultural management. Stratification ratios > 2 indicate a higher soil quality and contribution to agriculture sustainability. A case study from north-eastern Sardinia (Italy) is presented. Agriculture is mainly extensive and markedly agro-silvo-pastoral, and is typical of similar areas of the Mediterranean basin. The following land uses were considered: tilled vineyards established in 1994 (TV), no-tilled grassed vineyards established in 1991 (GV), hay crop (oats, Italian ryegrass and annual clovers or vetch) with sparse cork oaks (HC), pasture, covered with spontaneous herbaceous vegetation with sparse cork oaks (PA), semi-natural systems (scrublands, Mediterranean maquis and Helichrysum meadows), former vineyards set-aside about 30 years ago (SN), forest (Quercus suber L.) established in the past century (CO). The tilled vineyards and no-tilled grassed vineyards are agricultural higher intensive land uses, whereas hay crop, pasture, semi-natural and forest are agro-silvo-pastoral lower intensive land uses. Data are discussed in terms of soil organic C and total N levels in g kg⁻¹, and stratification ratios calculated from contents in the 0-20 cm soil layer divided by that in the 20-50 cm.