



Gaps in the World Reference Base for Soil Resources (WRB) for classifying charcoal hearth soils

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Charcoal making is one of the oldest forms of forest exploitation, civilizations being used to convert wood into charcoal for energetic and metallurgic purposes for thousands of years. For this purpose, firewood domes were built in the forests in appositely shaped emplacements, then left to burn for days under controlled semi-anoxic conditions. The legacy of such an activity is still recognisable in the involved soils: in fact, these show a black, thick, charcoal-rich top layer, which often overlies a complex sequence of pedogenic horizons that altogether reveals successive land uses and/or climatic phases.

In Europe, where charcoal production was particularly widespread, there is a plethora of abandoned charcoal hearths. A comprehensive survey of these sites is far from being accomplished, but most likely they are millions.

This presentation aims at underlining the gaps present in the current version of the World Reference Base for Soil Resources (WRB) concerning the classification of charcoal hearth soils. Charcoal hearth soils are full Anthropogenic soils, i.e. soils markedly affected by human activities, being their formation chiefly driven by repeated activities related to platform preparation and charcoal production. As such, they should fall within one of the two Reference Soil Groups (RSGs) including soils 'with strong human influence': 'Anthrosols' and 'Technosols'. Nonetheless, both these RSGs are defined by requests that are too stringent for most charcoal hearth soils. In fact, 'Anthrosols' are soils with long and intensive agricultural use or, however, a 'pretic' horizon at least 50 cm thick, which is a diagnostic horizon dark, rich in organic matter and phosphorous, high contents of exchangeable Ca plus Mg, with at least 1% artefacts or manufactured charcoal. Here the point is that the top black horizon of the majority of charcoal hearth soils is less than 50 cm. Much harder for charcoal hearth soils is being 'Technosols', because as well as other characteristics they must have more than 20% by volume, weighted average, of manufactured charcoal in the upper 100 cm from the soil surface, which according to our experience and data in the literature rarely happens.

Next edition of the WRB should lower the demands in terms of thickness of the top horizon rich in charcoal or its charcoal content to accommodate charcoal hearth soils in one or the other RSG with strong human influence.