Food and Agriculture Organization of the United Nations

Global Soil Doctors Programme

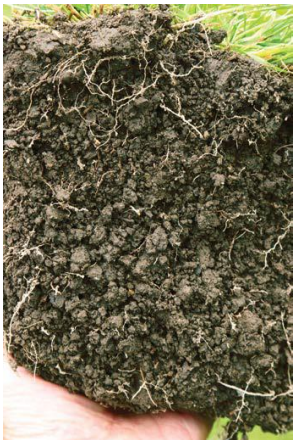
Chemical soil properties – Excercise C02a

ORGANIC MATTER: COLOUR OBSERVATION

Reference posters n.10a-10b

RELEVANCE	Soil colour is a very useful indicator of soil quality because it can provide an indirect measure of other more useful soil properties that are not as easily and accurately assessed, such as organic matter (OM). Soil OM plays an important role in regulating most of the biological, chemical and physical processes in soil, which together determine the health of the soil. For this exercise[1] we need to simply assess the topsoil colour, if there is a good amount of organic matter, the surface horizon will be darker and clearly defined. A change in soil colour can give a general indication of a change in organic matter under a certain land use or soil management.	
MATERIALS	 Trowel	
PROCEDURE	1) Using the trowel, collect at least two soil samples: one from the field, the second one from under the nearest fence or similar protected/undisturbed area	 © S. Pioli
	2) Compare the relative difference in colour of the soil samples. Use the three photographs of the evaluation example below to identify relative change in soil colour that has occurred.	 © S. Pioli
ADVANTAGES OF THE METHOD	Easy to implement, no specific tool required. It is possible to compare soils with different management	

LIMITATIONS OF THE METHOD	Colour is subjective, this method should always be carried on in comparison to a reference soil, which is sometimes not easy to find. Colour is not always directly or exclusively related to OM and not all soils show marked colour changes with changing OM content.
QUESTIONS TO BE ADDRESSED	Are there evident differences in soil colour between the sites? If there are differences, which soil appears darker? Which soil do you think has more organic matter content? What are the differences between the two sites in terms of soil disturbance and vegetation cover? What do you think is the main source of organic matter at the different sampling sites? Which practices do you think would improve OM?

EVALUATION EXAMPLES[2]		
POOR	MODERATE	GOOD
The colour of the soil is much paler than that under the protected/undisturbed area (fence). It is not possible to distinguish the surface horizon from the sub-surface horizon	The color of the topsoil is paler than that under the fence line, but the color difference is not striking. The colour of the surface horizon is pale and differs little from the lower horizon.	The topsoil is dark and markedly different from the lower horizon. The color of the topsoil is similar to that of the protected/undisturbed area (fence).
 © FAO 2008	 © FAO 2008	 © FAO 2008

[1] https://www.fao.org/3/i0007e/i0007e00.pdf

[2] As the colour of the topsoil can vary significantly between soil types, the photographs illustrate the degree of colour change rather than the absolute colour of the soil.