



Physical soil properties – Exercise P06a

Soil moisture: feel and appearance¹

Reference posters n. 7a and 8a

RELEVANCE

Soil moisture represents the content of water within the pore space of the soil. With careful attention to soil texture, one can estimate the percentage of soil moisture, and thus the water available to plants, by feel and appearance. Available soil water is very important for taking management decisions regarding irrigation, sowing, harvesting, application of fertilizers, grazing periods, among others. It is also very important to ensure this exercise is performed under adequate soil moisture conditions, or in “normal” weather conditions, i.e. outside periods of extreme drought or rainfall.

MATERIALS



Trowel / spade












or soil auger for deep layers (optional)

PROCEDURE

- 1) Obtain a soil sample at a selected depth using a trowel, spade or soil auger.
- 2) Squeeze the soil sample firmly in your hand. Apply pressure several times to form an irregular shaped ball or sausage. Observe firmness and staining on fingers as described in the table on page 2.
- 3) Then squeeze the soil sample out of your hand between your thumb and forefinger to form a ribbon with the soil sample. Observe the length and strenght of the ribbon and match to the table on page 2.



Soil moisture %	TEXTURE		
	Coarse	Medium	Fine
0-25 <i>Dry</i>	Dry and loose. Holds together if not disturbed, loose sand rains on fingers with applied pressure.	Dry soil aggregations break away easily. No moisture staining on fingers. Clods crumble with applied pressure.	Dry soil aggregations easily separate. Clods are hard to crumble with applied pressure.
25-50 <i>Slightly moist</i>	Forms a very weak ball with well-defined finger marks. Light coating of loose and aggregated sand grains remains on fingers.  © USDA-NRCS	Forms a weak ball with rough surfaces. No water staining on fingers, few aggregated grains break away.  © USDA-NRCS	Forms a weak ball . Very few soil aggregations break away. No water stains. Clods flatten with applied pressure.  © USDA-NRCS
50-75 <i>Moist</i>	Forms a weak ball with loose and aggregated sand grains on fingers. Darkened colour, moderate water staining on fingers.  © USDA-NRCS Will not ribbon.	Forms a ball , very light water staining on fingers. Darkened colour, pliable.  © USDA-NRCS Forms a weak ribbon between thumb and forefinger.	Forms a smooth ball with defined finger marks, light soil/water staining on fingers.  © USDA-NRCS Ribbons between thumb and forefinger.
75-100 <i>Wet</i>	Forms a weak ball . Loose and aggregated sand grains remain on fingers, darkened colour, heavy water staining on fingers.  © USDA-NRCS Will not ribbon.	Forms a ball with well-defined finger marks. Light to heavy soil/water coating on fingers.  © USDA-NRCS Forms weak ribbon between thumb and forefinger.	Forms a ball . Uneven medium to heavy soil/water coating on fingers.  © USDA-NRCS Ribbons easily between thumb and forefinger.
>100 <i>Saturated</i>	Forms a weak ball . Moderate to heavy soil/water coating left on fingers, wet outline of soft ball remains on hand.	Forms a soft ball . Free water appears on soil surface when squeezed or shaken. Medium to heavy soil/water coating remains on fingers.	Forms a soft ball . Free water appears on soil surface when squeezed or shaken. Thick soil/water coating remains on fingers, soil is slick and sticky.

ADVANTAGES OF THE METHOD	It is a quick field method that provides an estimate of soil moisture or available soil water, allowing multiple evaluations to be obtained at low cost.
LIMITATION OF THE METHOD	Though it appears easy and quick, the method is subjective and depends on the experience of the person in making this measurement.
QUESTIONS TO BE ADDRESSED	Is this moisture sufficient to support crop growth? Is the moisture different in different parts of the landscape? Is the moisture different at different depths?

EVALUATION EXAMPLES		
POOR	MODERATE	GOOD
Soil moisture <50% (plants may be experiencing water deficit stress) or > 100% (near saturation; plants may be experiencing waterlogging conditions).	Soil moisture between 50 % and 75% (moist conditions)	Soil moisture between 75% and 100% (wet conditions)