

Soil moisture regimes

Soil moisture regimes refer to relative amount of water in soil control section. Soil control section is the depth of soil used to measure soil moisture regimes. The soil control section ranges from 10-30cm when soil is fine loamy, coarse silty, fine silty and clayey, 20-60cm when soil is coarse loamy and 60-90cm when soil is sandy. Soil moisture regimes range from those where ground water remains on the soil surface for a part of year to those containing only unavailable water for much of the year. Soil moisture regimes indicate the soil moisture condition that combine many water related features such as runoff, climate, seepage, drainage and slope direction. The regimes are based mostly on the length of time (consecutive days) for which soil control section is moist to permanent wetting percentage. Following are soil moisture regimes:

1. Aquic soil moisture regime

The word aquic derived from Latin word aqua, aqua mean water. Aquic moisture regime is a reducing regime in soil that is completely free of dissolved oxygen. It is not known how long soil must be saturated with water before it is set to have an aquic moisture regime but duration must be at least a few days to deplete dissolved oxygen completely. When soil is completely saturated with water, the dissolved oxygen is consumed by plant roots, microorganisms and soil fauna resulting in reducing conditions in soil. When soil remains saturated with water for sufficiently long period of time to deplete the oxygen completely. Consequently soil is not suitable for the cultivation of crops because of anaerobic conditions.

2. Udic moisture regime

The word udic derived from Latin word Udus, Udus mean humid; at this moisture regime soil moisture control section is not dry in any part for 90 cumulative days in a year. At this moisture regime adequate moisture is available for growing plants for most of the year. Udic moisture regime is common to the soils of humid climates that have well distributed rainfall, which is approximately equal or exceeds the evapotranspiration requirements.

3. Ustic moisture regime

The word ustic derived from Latin word ustus, ustus means dryness. At this moisture regime soils contains considerable but inadequate plant available water. The soil moisture control section may dry in any part for more than 90 but less than 180 cumulative days per year. However, soil moisture control section is not dry for 45 consecutive days in four growing months from June 21- October 20.

4. Xeric moisture regime

The word xeric derived from a Greek word xeros, xeros mean dry. Xeric moisture regime is a typical moisture regime in areas where winter is moist and cool while summer is hot and dry. Xeric moisture regime contains moisture which is particularly effective for

leaching during winter months when evapotranspiration is minimum. In the areas of xeric moisture regimes soil moisture control section is dry in all parts for at least 45 consecutive days in four growing months June 21- October 20. However, soil moisture control section is moist for half of the time per year.

5. Aridic/ Torric soil moisture regime

The word aridic derived from Latin word Aridus, Aridus mean dry while Torric derived from a Latin word torridus, torridus mean hot and dry. These terms are used for some moisture regimes but in different categories of soil taxonomy. In aridic or Torric soil moisture regime soil moisture control section is dry in all parts for more than half of the year, and the soil temperature at the depth of 50cm from the soil surface is above 5C°. soil moisture control section is moist in some or all parts for less than 90 consecutive days. Soils that have aridic or Torric moisture regimes normally occur in arid climate. There is little or no leaching in the moisture regime and soluble salts may accumulate in soil if there is any source of salt.