Available Water Capacity

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Calculating Available Water Capacity (AWC)

You will calculate the available water capacity of a soil to a 40 inch depth. Using the physical properties table, find the AWC values by soil name and horizon depths. Use the average (middle) number in the table. First, calculate the AWC by horizon down to 40 inches. See example below.

Horizon thickness	AWC (inches/inch)
0-7”	0.14-0.16-0.18
7-25’’	0.20-0.24-0.28
25-45”	0.22-0.27-0.30
45-60”	0.18-0.20-0.22

Calculations:

7” x 0.16= 1.12

18” x 0.24= 4.32

15” x 0.27= 4.05

Total AWC in soil profile= 9.49 inches per inch

The capacity, in inches, in a 40-inch profile or to a limiting layer is

expressed as:

Very low…….0 to 2.4

Low……2.4 to 3.2

Moderate….3.2 to 5.2

High……more than 5.2

https://climate-woodlands.extension.org/soils-and-water-availability/

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051279.pdf