

Homework 3: UTD Soil Moisture and Irrigation

GEOS 4430 - Fall 2011

Due: Oct. 6th

1 Soil Moisture Potential Measurements

1. use the tensiometer to measure soil moisture potential (ψ) at about 1 foot depth in at least 4 sites on campus in addition to those listed in Table 2.
2. use Figure 1 and/or Table 1 to determine soil water content at those ψ values
3. what is the significance of the estimated soil moisture condition?
 - (a) for the greatest suctions (most negative pore pressures), will plants die at those values? If not, what condition should the plants be in?
 - (b) for the smallest suctions, is there any indication of over-watering? (explain)
 - (c) Where does that excess soil water go in the case of overwatering?
 - (d) use the AgriLife irrigation calculator to estimate how much watering was required this week
 - (e) If these low suctions persist over time should any adjustments be made to irrigation? How much adjustment (how would you decide)?

Table 1: Moisture potential vs. soil condition. Note suction is simply the negative of pore pressure. After NCSU SSC012 course notes.

<u>Soil Water Suction</u>	<u>Moisture Condition</u>
0 bar	saturated
1/3 bar (30 centibar, 1.4 pF)	field capacity
15 bar (1500 cb, 4.2 pF)	wilting point
31 bar (3100 cb, 4.5 pF)	air dry

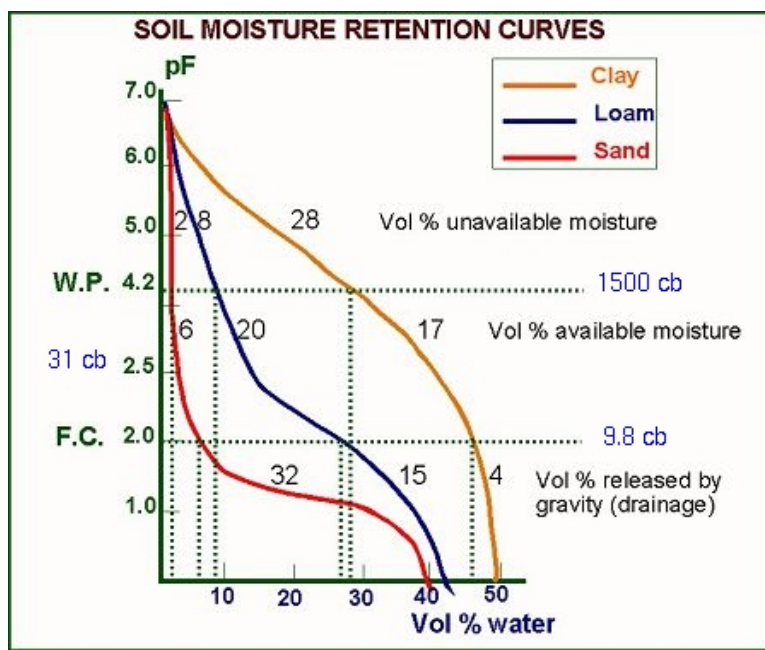


Figure 1: Typical soil moisture retention curves vs. soil texture. Note 2.5 pF = 31 centibar, 2.9 pF = 80 cb.

