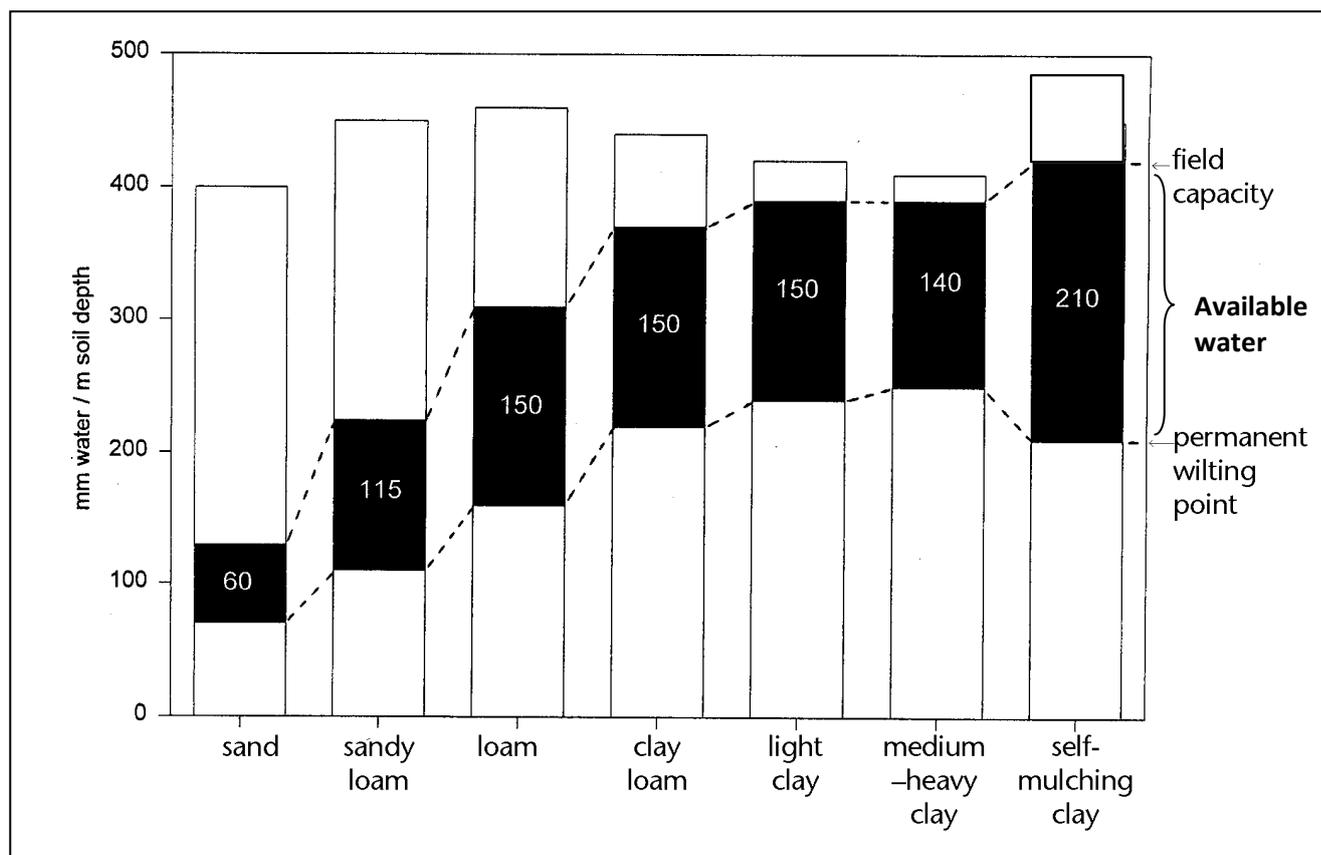


Water-holding capacity of soil

The **total water-holding capacity** of saturated soils is generally 400–600 mm of water per metre of soil depth, but this depends very greatly on the clay content or soil texture (Figure 1).

- Sand (S) holds about 70 mm of water per metre of soil depth below permanent wilting point, 60 mm (the shaded section) is the total water available to plants (Available Water), and the remaining pore volume is the free-draining pore space.

- Medium to heavy clay (MC–HC) holds slightly more water, but 250 mm is held below permanent wilting point, 140 mm is available to plants, and there is little free-draining pore space.
- Sandy loams (SL), loams (L), clay loams (CL) and self-mulching clays (SMC) hold a similar total volume of water. Self-mulching clays have the most available water which plants can use, followed by the loams, clay loams and light clays (LC).



A plant cannot easily use all of the available water held in the soil. For practical irrigation planning, irrigators must work with the water that can be readily removed from the soil by the plant, the **readily available water**, or RAW. RAW is expressed in millimetres per metre (mm/m) and indicates the depth of water (mm) held in every metre (m) of soil depth that can be readily removed

RAW should be calculated for the plant's **effective root zone**. To achieve high yields without creating excess drainage, you need to know the RAW for each crop. Only 25 to 60% of the total available water is "Readily Available Water" (Table 1). When RAW is used up, irrigation should be applied.



