

Water Dynamics in Plant Production, 2nd Edition

Questions and Discussion Points

Chapter 1 – The Role of Water in Plant Life

Section 1.1

1. What is 'photosynthesis'? Why 'photo'? What kind of organic compounds are synthesized? Identify the two inorganic compounds that are essential for photosynthesis.
2. Why do plants usually use much more water per unit time than is essential for photosynthesis?
3. Why do plants depend on a steady uptake of water?
4. Please explain the conversion of millimetres (mm) of water (height) into litre (l) water per m^2 soil surface area. Hint: Calculate the volume of a cuboid with sides of 1 m, 1 m and 1 mm. Convert that volume into litres.

Section 1.2

1. Drought occurs when two atmospheric conditions coincide. State these conditions.
2. What are CAM plants and why are they so perfectly adapted to arid areas?
3. Explain the different forms of drought resistance.
4. What is 'osmotic adjustment'?

Section 1.3

1. Define and explain the term 'crop growth rate'.
2. Can you explain why the relation between seed yield and water use (Fig. 1.3) may be influenced by evaporative demand?

Section 1.4

1. The tropical rainforest develops under greater annual precipitation rates than the rainforest of temperate zones or the boreal forest (Fig. 1.5). Why is the temperature so critical in relation to the existing precipitation? Precipitation is a poor indicator of what kind of assessment?