

Water Dynamics in Plant Production, 2nd Edition

Multiple Choice Questions

Chapter 3 – The Interdependence of Soil Water and Vegetation

1. Which of the following statements are true? Show your working starting with the soil water balance.

- (a) Under rain-free conditions without runoff or subsoil drainage, transpiration plus soil evaporation is balanced by the change in soil water storage.
- (b) When runoff is prevented and evapotranspiration includes soil evaporation, transpiration and interception, water loss from a field is the difference between the precipitation and the change in soil water storage.
- (c) If a bare soil is saturated and covered in plastic until drainage stops, in the absence of rainfall when the cover is removed, changes in soil water storage are equal to the water lost by evaporation.
- (d) Drainage always requires a change in soil water storage.

2. With the same plant stand, why may coarser-textured soils allow more groundwater recharge than a fine-textured soil?

- (a) Coarser soils contain less organic matter.
- (b) Coarser soils have freer drainage.
- (c) Coarser soils have smaller water storage and field capacity.
- (d) Coarser soils are associated with less runoff.

3. Groundwater recharge under forest compared with arable crops is:

- (a) always greater
- (b) always smaller
- (c) dependent on soil type, terrain and precipitation
- (d) unpredictable

4. What factors (there may be more than one) could result in differences in groundwater recharge below two forests in the same location but with contrasting tree species?

- (a) canopy density
- (b) canopy height
- (c) evergreen foliage rather than deciduous
- (d) none of the above

5. What forces act on water in soil capillaries? (There may be more than one correct answer.)

- (a) adsorption
- (b) cohesion
- (c) adhesion
- (d) electric charge differences