

# Water Dynamics in Plant Production, 2nd Edition

## Questions and Discussion Points

### Chapter 4 – Properties and Energy State of Water

#### Section 4.1

1. Explain the 'bipolarity' of the water molecule.
2. Bipolarity or simply polarity of the water molecule causes some remarkable and specific characteristics of water as a liquid. Describe some of them.
3. Explain the phenomenon of capillarity in a glass tube.
4. Which fact is explained by the 'capillary rise equation'?

#### Section 4.2

1. Water flow in the soil is a general phenomenon and is caused by which criterion? The criterion is a quantity of intensity.
2. The Darcy equation (Eqn 4.4) combines a quantity of capacity with a quantity of intensity. Please evaluate this statement by citing the Darcy equation.
3. Explain the existence of the matric potential,  $\Psi$ , by use of the logical deduction indicated in Fig. 4.5 (right-hand side).
4. Explain the difference between  $z$  and  $Z$ .
5. We recognize four component potentials of the total water potential in the soil–plant system. What are they?