Water Dynamics in Plant Production, 2nd Edition

Questions and Discussion Points

Chapter 15 – Climatic Factors Influencing Yield

Section 15.1
1. Comment on the stated view: the annual cycle of the seasons depends on the variable distance between sun and earth.
2. Radiation and temperature change during the seasons. Winter annual crops may need vernalization. Explain this type of physiological adaptation and why this trait does not exist in summer crops.
3. Crops usually react in phase development according to day length. Explain this phenomenon of photoperiodism. Give an example of how farmers have adapted this knowledge in crop management.
4. What is 'thermal time'?
5. Explain the climatic diagram (Fig. 15.2) according to Walter (1970).
6. What is meant by 'normalized rainfall' in Fig. 15.2?
7. Please contrast the climates presented in Fig. 15.2, in particular with respect to water as a limiting factor in plant production.
8. Why are winter-sown crops usually more drought tolerant than spring-sown crops?

Section 15.2
1. What are the causes of global climate change?
2. Explain natural and anthropogenic greenhouse effects with respect to global warming.
3. Discuss the statement 'Agriculture is equally cause and victim of global warming'.

Section 15.3
1. Discuss some aspects of temperature rise, inadequate precipitation and increase in CO_2 concentration on regional cropping patterns and crop performance.