

Water Dynamics in Plant Production, 2nd Edition

Multiple Choice Questions

Chapter 13 – Development of Economic Yield under Inadequate Water Supply

1. Water stress affects plant processes to differing extents.
 - (i) Which of the following processes are particularly resilient in the presence of water stress?
 - (a) cell elongation
 - (b) tissue growth
 - (c) assimilate translocation
 - (d) all of the above
 - (e) none of the above
 - (ii) Which of the following processes are particularly sensitive in the presence of water stress? (There may be more than one correct answer.)
 - (a) cell elongation
 - (b) tissue growth
 - (c) assimilate translocation
 - (d) all of the above
 - (e) none of the above
2. The impact of water stress is multifaceted but one rule is critical. Which of the following most clearly identifies that rule?
 - (a) Plants are very susceptible to water stress and, no matter how small, it will affect economic yield.
 - (b) Most crops can withstand a short period of water stress, such as might be experienced at peak periods of transpiration, without affecting its growth potential.
 - (c) A crop stand subject to periods of water shortage during the growing season cannot attain the maximum biomass yield.
 - (d) None of the above.
3. Which of the following are important in assessing the likely impacts of water stress on economic yield?
 - (a) intensity of stress
 - (b) duration of 'stress period'
 - (c) the stage of development when water stress is experienced
 - (d) how the capacity of sinks for assimilates are affected by stress
 - (e) how the capacity of sources of assimilates are affected by stress
 - (f) all of the above
 - (g) none of the above
4. In maize, important periods of reproductive development include (a) tasselling, (b) silking, (c) yellow ripeness and (d) full maturity. Answer the following using a, b, c and/or d (there may be more than one correct answer):
 - (i) At which of these stages is crop yield most susceptible to drought?
 - (ii) At which of these stages does water stress most affect the number of kernels per ear?
 - (iii) At which of these stages is kernel dry weight most affected by drought?

5. Unlike maize, other cereals (e.g. wheat and barley) are particularly susceptible to water stress at the vegetative stages of tillering and jointing. This is because stress at these stages determines:

- (a)** the eventual harvest index
- (b)** the eventual grain weight
- (c)** the number of fertile ears per unit area
- (d)** the availability of assimilates to support grain filling