

Lecture 8 Study Guide (video: 1 hour, 33 minutes)

Study Questions

1. Are all parasitic organisms necessarily pathogenic? If not, explain. Give examples.
2. What are traps crops, and how might they control disease? In terms of economics, what limitations might they have?
3. Describe how a spore can penetrate directly through a leaf surface.
4. Urediospores of rust fungi have rough surfaces, and the ascospores of some fungi are filamentous? Why? What is the “evolutionary justification” for such morphological features?
5. Compare and contrast the potato late blight epidemics of the 1840s with those occurring since the early 1990s. What vulnerabilities did the 19th century potato crop have? Similarly, what vulnerabilities face us today?
6. Carlos Ochoa, a potato breeder, describes a serious problem associated with the introduction of new, genetically improved potato varieties throughout the Andes. What is he referring to?
7. Are most plants resistant to most plant pathogens? Conversely, are virtually all plants, wild or cultivated, susceptible to one or more different plant pathogens?
8. Describe some possible different sources of primary inoculum for any given crop.
9. Why are plants growing in nematode-infested soil more likely to suffer from fungal infections than those that are not?
10. Whereas the original home of potato is the South American Andes, where do the various races of *Phytophthora infestans* originate?
11. What is the difference between an obligate parasite and a facultative parasite? Give examples.
12. Give examples of pathogens with broad host ranges. Likewise, highly specific host ranges.
13. What is a latent period? Describe this term in terms of virus infections.
14. Why is a plant that develops only local lesions after inoculation by a virus considered to be resistant instead of susceptible?
15. Why is the “time” component of the disease “tetrahedron” so important when considering disease epidemiology?

Key Words

Appressorium
Direct penetration
Disease triangle
East wind of the Mediterranean
Gene erosion (in relation to C. Ochoa's work)
Hypersensitive reaction (to virus inoculation)
Latent period

Local reaction (to virus inoculation)
Monoculture
Mycorrhizal fungi
Natural openings (e.g. stomata, etc.)
Ochoa, Carlos
Parasitism (obligate and facultative)
Penetration peg
Phytophthora infestans (different races)
Prepenetration phenomena
Primary inoculum
Rhizobium
“Running out” (of vegetatively propagated plants)
Secondary inoculum
Symbiosis
Systemic reaction (to virus inoculation)
Trap crops