

Components of plant disease

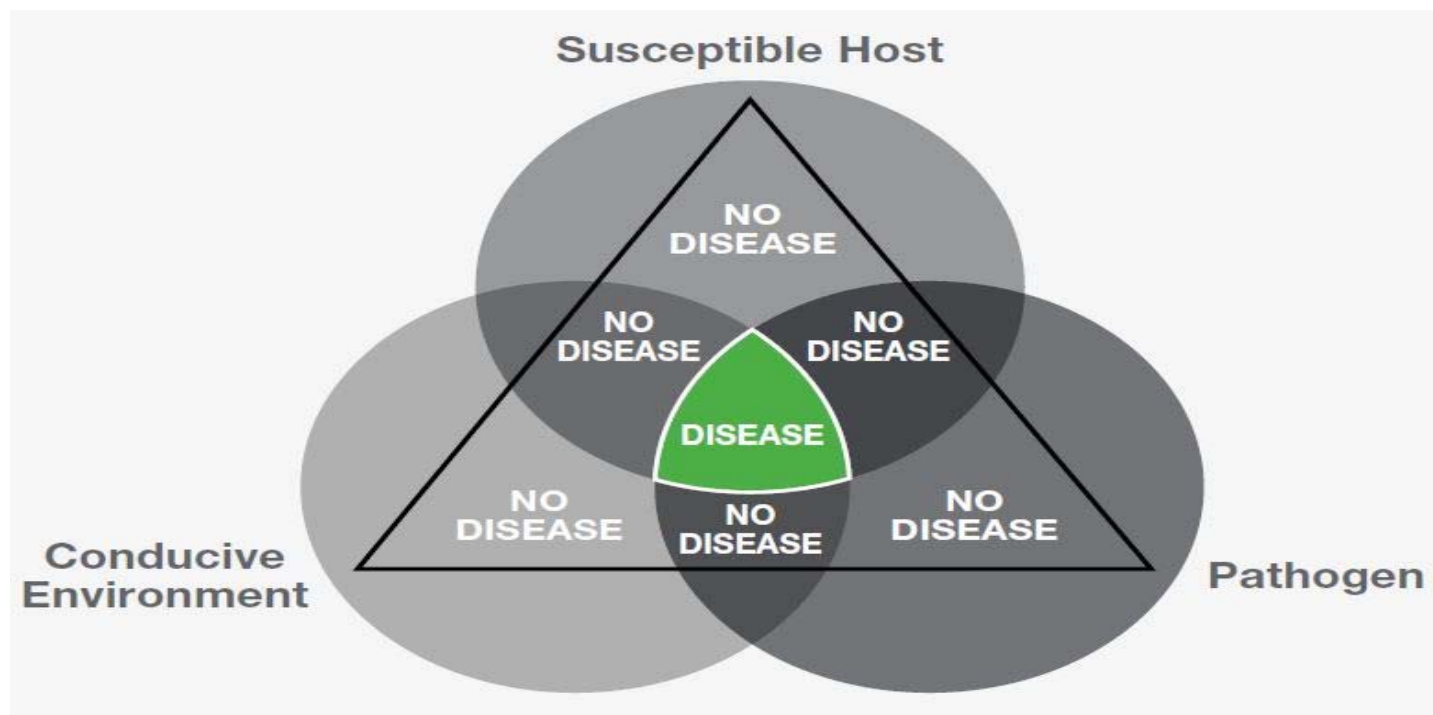
Disease triangle

Factors for successful disease development

- A susceptible host
- A virulent pathogen
- A favourable environment

For disease to occur all three of these must be present

It is important to remember that within each of the three components — host, pathogen, and environment — there are numerous variables that may affect both the incidence and severity of disease. These variables include genetic diversity, biology and life cycle of the host plant and pathogen, and environmental conditions.



Properties of plant pathogens to cause successful disease

- Level of virulence
- Adaptability
- Dispersal efficiency
- Survival efficiency
- Reproductive fitness

Properties of hosts

- Susceptibility
- Growth stages and form
- Population density and structure
- General health

Properties of environment

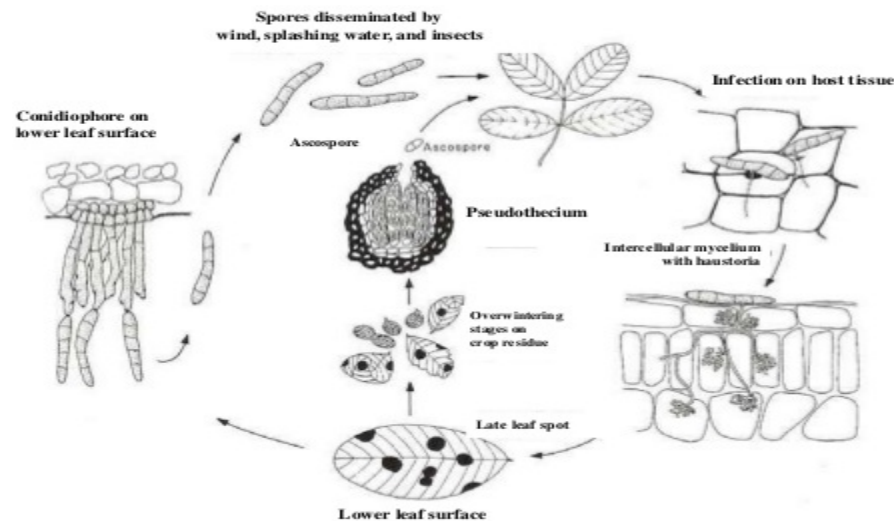
- Temperature
- Rainfall / Dew
- Leaf wetness period
- Soil properties
- Wind

Potato late blight development

- The disease is more severe in cool, wet conditions.
- Cool nights, warm days, and extended wet conditions from rain and fog can result in late blight epidemics in which entire potato fields are destroyed in less than two weeks.

Chain of events that lead to disease development

- Inoculation
- Penetration
- Infection
- Incubation
- Reproduction
- Dissemination



Disease cycle of leaf spot of groundnut

- **Inoculation:** Arrival of the pathogen on the host
- **Penetration:** Invasion of a host by a pathogen. It may be direct or indirect
- **Infection:** Successful establishment of pathogen with host cells or tissues and derive nutrition from them
- **Incubation:** Time interval between arrival of inoculum on host and symptom development
- **Reproduction:** Multiplication of the pathogen and formation of secondary inoculum
- **Dissemination:** Infected plant parts, wind, rain, insects, nematodes, etc.

Disease cycles

- There are two types of disease cycles
 - Monocyclic (Smuts, rusts, etc.)
 - Polycyclic (Late blight of potato, powdery mildews,

