

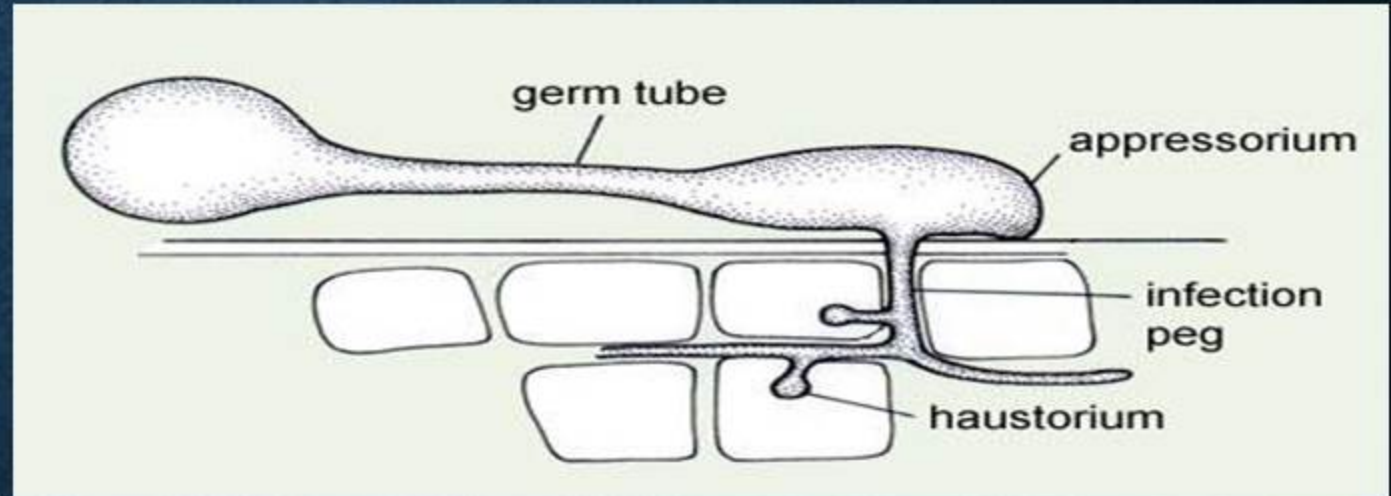
PENETRATION PROCESS

1. Direct penetration
 2. Indirect penetration
 - a) Through natural openings (stomata, hydathodes, lenticels)
 - b) Through wounds
- **Fungi** may penetrate in **either way**
 - **Bacteria** mostly enter through **wounds** and sometimes by **natural openings**.
 - **Viruses, viroids, phytoplasma, RLOs** etc. by **mechanical means (wounds) and by vectors**

PENETRATION PROCESS - DIRECT

- Infection structures in fungi

- Germtube
- Appresorium
- Infection hyphae
- Haustoria
- Infection cushion
- Rhizomorphs



PRE-PENETRATION PROCESS

- **In nematodes**, hatching of eggs
- **In viruses**, no activity.
- **In higher parasitic plants**, seed germination, then formation of haustoria.

