Black wart disease

It is a great economic important disease affecting cultivated **potatoes**, when the pathogen has been entered to a field of potato cultivation the whole crop may be devastated and unmarketable. Moreover, the soil itself cannot be used for another crop production due to the longevity of the fungus , because the resting spore may remain 40 years in soil .

wide spread in regions of moderate rainfall and temperature which is suitable to the cultivation of potatoes. **Black wart disease** caused by ***Synchytrium endobioticum*** (Scientific Name) , **cauliflower disease, potato tumor, potato cancer** (Common Name).

Classification:
Kingdom : Fungi (Eumycota)
Phylum : Chytridiomycota
Class : Chytridiomycetes
Order: Chytridiales
Family: Synchytriaceae
Genus: ***Synchytrium endobioticum***

Characterization of black wart disease:

1. Fungus causing black wart disease is an obligate, holocarpic and endobiotic parasite.
2. It is a long-cycle fungus that does not produce hyphae but rather a thallus composed of sporangia which contain 200 to 300 mobile zoospores (1.5-2.2 µm diam.).

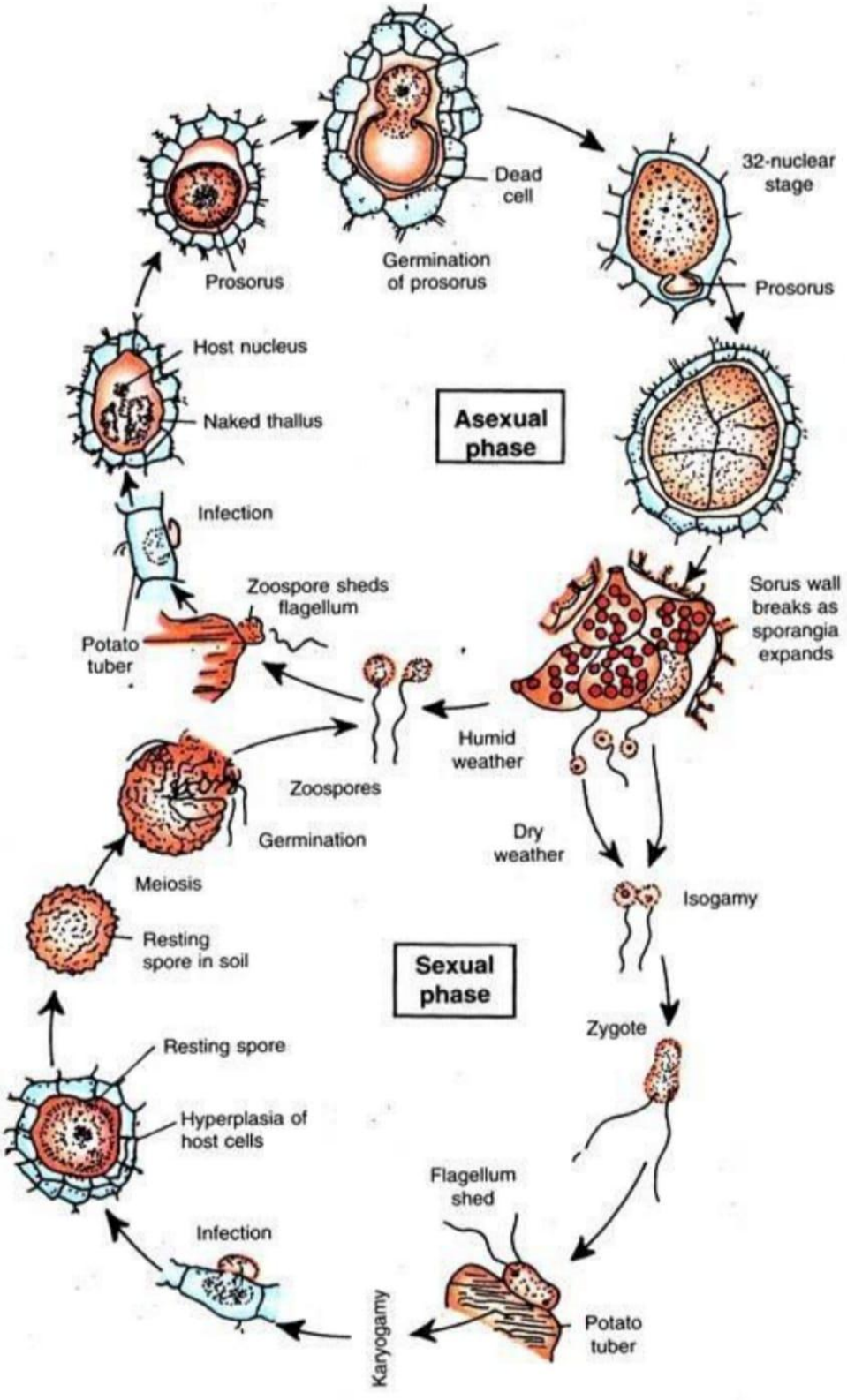
3. Asexual reproduction do under suitable conditions by posteriorly uniflagellate haploid motile zoospores to form the prosorus .
4. After that the prosorus convert into a(sorus) consist of group of sporangia(1-9).
5. Sexual reproduction do when environmental or nutritional conditions become unfavorable (dry water) the zoospores fuse together as gametes (isogamy) to form zygote which cause infection ,hyperplasia , resting spore and warts.
6. The chitinous/melaninized wall of the resting spore is extremely chemo-resistant to common soil agents.

Pathological symptoms

The disease is characterised by brown or black cauliflower-like (galls, tumor) growth on tubers, stolons and stem bases. Sometimes, the size of the warts are more than the size of the tuber. The fungus cause enlargement of the cells (hypertrophy) as well as increased the number of cells (hyperplasia) in the infected potato tuber.

Figure (1) Black wart disease

Life cycle of *Synchytrium endobioticum*:



Management and control:

1. Cultivation of resistant varieties.
2. Detection the soil before cultivation: the principal method is a wet-sieving or dry- sieving technique. Flotation on chloroform is also useful.
3. Soil treatment with mercuric chloride and formalin.
4. Scheduling 'wart-infested' fields.
5. Potatoes and any kind of plants with roots (including bulbs, corms and tubers) for export, should not be grown in fields where *S. endobioticum* has occurred or is still present .
6. Using the fungal or bacterial biological control.

Dr. Jehaan M. Al-rawi