ORGANISM (ORGA) BCH-ORGA-SCBD-115642-1

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Organism information

Scientific name

Phytophthora infestans

Taxonomic Classification

Kingdom	Chromista
Phylum	Oomycota
Class	Oomycetes
Order	Peronosporales
Family	Peronosporaceae
Genus	Phytophthora
Species	Phytophthora infestans

Common name(s)

Phytophthora blight	EN

Type of organism

Other (Water mould)

Characteristics related to biosafety

Centre(s) of genetic diversity

Toluca Valley, Mexico	EN

Habitat range

Cool nights, warm days, and extended wet conditions favour the development of severe epidemics. Sporulation can occur between 3-26°C, but optimally between 18-22°C. At temperatures between 21-26°C, sporangia form germ tubes for direct infection and at temperatures below 18° C, sporangia produce zoospores, which can each initiate an infection. Condensation also promotes the production of sporangia.	EN

Geographical distribution

Worldwide - associated with the dispersal of potato seed tubers.	EN

Known pathogenicity and/or allergenicity

Phytophthora infestans has been observed infecting roughly 90 plant species . However, the	EN

pathogen is most associated with potatoes (*Solanum tuberosum*) and tomatoes (*Solanum lycopersicum*).

The infection cycle begins with the development of asexual spore producing structures (sporangia) on the aerial parts of the plant or from oospores, which release zoospores (wind and rain dispersal) or germinate directly to initiate infection. Zoospores discard their flagella and synthesize a cell wall to form a cyst, which germinate within hours and enter into the host via openings such as stomata or form an appressorium-like germ tube to penetrate into the host. After penetration, a primary infection vesicle is formed and it is from which hyphae will emerge to colonize the plant host. The hyphae grow intercellularly, producing haustoria, which project into host cells, initiate an interaction between the pathogen and the host cell membrane and allow the pathogen to siphon nutrients from the host cells. As the infection spreads, *P. infestans* will produce sporophores, which will lead to the production of further sporangia and cause lethal lesions to be formed on the plant.

If two different mating types come into contact, sexual reproduction can occur and leads to the formation of thick-walled structures called oospores, which allow for survival and dispersal of the pathogen. In the absence of oospores, *P. infestans* can survive between crops as mycelium in infected tomato fruit or potato tubers.

Additional Information

Phytophthora infestans is a fungus-like microorganism (water mould) that is most famously known as being the causal agent of the Irish potato famine.	EN

Other relevant website addresses and/or attached documents

? NCBI Taxonomy Browser - Phytophthora infestans *(English)*

? CABI - Phytophthora infestans (Phytophthora blight) *(English)*

? APSNet - Late blight of potato and tomato *(English)*

? UniProtKB - Proteomes - Phytophthora infestans (strain T30-4) (Potato late blight fungus) *(English)*

Phytophthora Database - Phytophthora infestans *(English)*

? The Irish potato famine pathogen Phytophthora infestans originated in central Mexico rather than the Andes.pdf *(English)*

? The rise and fall of the Phytophthora infestans lineage that triggered the Irish potato famine.pdf *(English)*

? Genome sequence and analysis of the Irish potato famine pathogen Phytophthora infestans.pdf *(English)*

? Analysis of the lineage of Phytophthora infestans isolates using mating type assay, traditional markers, and next generation sequencing technologies.pdf *(English)*

? NCBI Genome - Phytophthora infestans *(English)*

? The cell biology of late blight disease.pdf *(English)*

? EPHYTIA - INRA - Phytophthora infestans - Late blight *(English)*

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Further Information

Questions about the Cartagena Protocol on Biosafety or the operation of the Biosafety Clearing-House may be directed to the Secretariat of the Convention on Biological Diversity.

Secretariat of the Convention on Biological Diversity
413 rue Saint-Jacques, suite 800
Montreal, Québec, H2Y 1N9
Canada
Fax: +1 514 288-6588
Email: secretariat@cbd.int