

Pathogen of the month: April

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Scientific name: *Pectobacterium* spp.

Common names: Soft rot bacteria; Soft Rot Enterobacteriaceae

Pectobacterium species, formerly known as *Erwinia* species, are the main causal agents of soft rot, blackleg and aerial stem rot of potatoes as well as of many other vegetables and ornamentals (Figure 1). The genus consists of many species capable of causing disease. It is a Gram-negative, opportunistic pathogen that causes tissue maceration through the production of pectinolytic enzymes that result in cell wall degradation. The pathogen is mainly spread by latently infected propagation material, although it can also be spread by contaminated irrigation water, equipment and insects. It isn't soilborne and therefore doesn't overwinter or survive in the soil for longer than six months in the absence of a host. The pathogen remains latent within the plant until favourable environmental conditions cause a shift from latency to disease development. Symptom expression is dependent on quorum sensing and therefore, pectinolytic enzyme production only starts after the pathogen population reaches a critical threshold. The main environmental factor that promotes disease development is high soil moisture, which creates an anaerobic environment, favouring the growth of this facultative anaerobe.

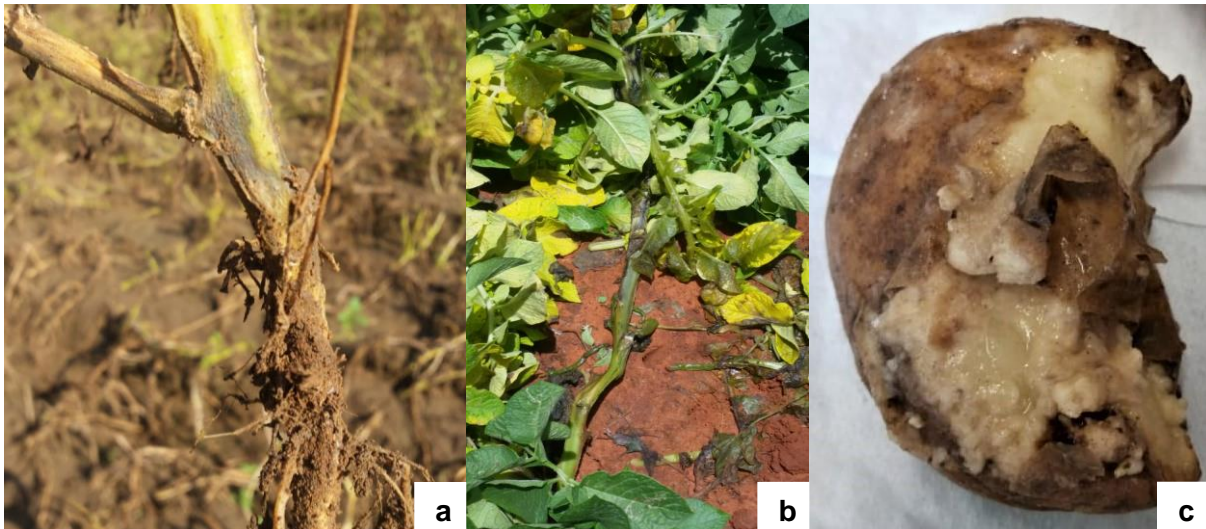


Figure 1: Typical symptoms caused by *Pectobacterium* species namely blackleg (a and b) and soft rot (c) (J. Boshoff).

Management of the diseases caused by *Pectobacterium* spp. requires an integrated approach, the most important factor being the use of pathogen-free propagation material. It is also important to minimise contamination and damage of propagation material, through proper disinfestation of equipment and careful handling. Furthermore, it is important to plant in well-drained soils to avoid waterlogging, which promotes disease development. Dry storage conditions are also necessary to avoid soft rot of tubers. Calcium enhances resistance to the pathogen, and it is therefore good practice to amend soils low in calcium with CaSO_4 (gypsum). High soil nitrate concentration, on the other hand, promotes pathogen growth and is therefore contraindicated. Finally, chemical control by means of copper sprays reduces the spread of bacteria to healthy plants especially when applied to wounded stems to prevent infection.