Pathogen of the month –October 2011

Boedijn & Reitsma

Calonectria ilicicola

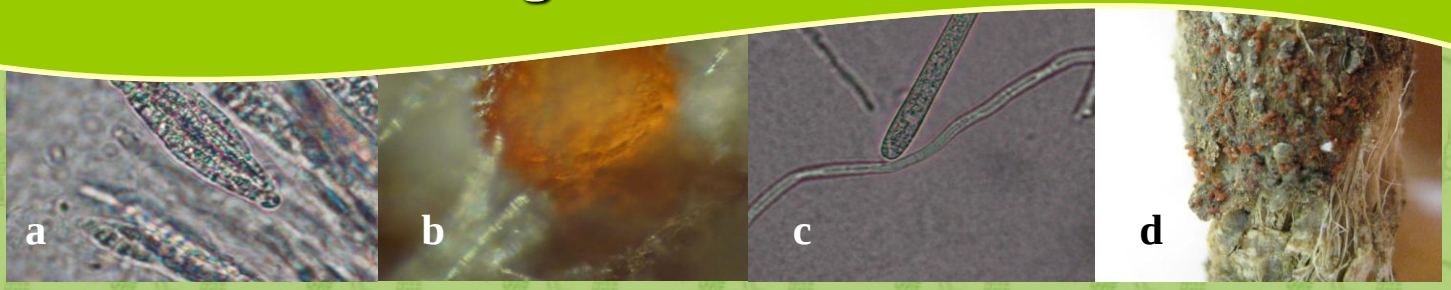

Fig. 1. *Calonectria ilicicola;* asci with ascospores (a); microsclerotia on a papaya root (b); conidium of anamorph, *Cylindrocladium parasiticum* (c); orange perithecia on papaya root (d); Photo credits M. Male (a,b,c), L. Vawdrey (d)

Disease: Collar rot of papaya
Pathogen: *Calonectria ilicicola* (anamorph: *Cylindrocladium parasiticum*)
Classification: K: Fungi, D: Ascomycota, C: Sordariomycetes, O: Hypocreales, F: Nectriaceae

Calonectria ilicicola (Fig. 1) is a fungal pathogen found throughout the world infecting a wide variety of crops. It is best known as the causal agent of peg, pod and root necrosis of peanuts, collar rot of koa, leaf spot in some eucalypts and various root and collar rots of soybean, anthurium, groundnut and lucerne. In Australia, it causes black rot of peanut and collar rot of papaya. Its development is favoured by poorly drained soils.

Host Range:

C. ilicicola is found throughout the world. It is pathogenic on a wide variety of plants including peanuts, soybean, anthurium, eucalypts, lucerne, groundnut and papaya.

Impact:

In far north Queensland, collar rot of papaya caused by *C. ilicicola* affects young plants in poorly drained soils mostly during winter months. It is usually scattered and sporadic in a field and is more likely to occur in replanted ground than virgin soil, usually after heavy rainfall. Conidia and ascospores are responsible for long-distance spread and microsclerotia for long term survival. Microsclerotia are known to exist for >3 years in soil.

In Hawaii, *C. ilicicola* was initially a severe problem for papaya seedlings in fields recently cleared of native Ohia forests. After this practice was discontinued, collar rot occurred sporadically in poorly drained replanted fields after heavy rain.

Key Distinguishing Features:

In seedlings, the initial symptoms are of a discoloured water soaked, root collar. As this rot develops, plants are stunted and leaves become chlorotic and wilt. Eventually, orange to red perithecia and thick-walled brown microsclerotia will form on roots at or near the soil line (Fig 1 b,d). In culture, asci are clavate, 90-140 x 12-19µm, tapering to a long thin stalk containing eight hyaline ascospores (Fig1,a). Macroconidia (Fig1, c) produced by the anamorph are hyaline, cylindrical, two- to four-celled and 45-90 x 4-7µm.

Control:

Cultural controls include planting resistant varieties, planting into mounds and controlling soil moisture. Most broad spectrum fungicides are effective against collar rot however they are seldom used due to the scattered and sporadic nature of the pathogen. Spot treatments and replanting with healthy seedlings have been effective.

Further Reading:

Crous (2002) *Taxonomy and pathology of* Cylindrocladium (Calonectria) *and Allied Genera.* APS Press: Minnesota
Hwang & Ko (1975) *Phytopathology* 66: 51-54
Laemmlen & Aragaki (1971) *Plant Disease Reporter* 55: 743-745
Persley & Ploetz (2003) in *Diseases of Tropical Fruit Crops*. CABI: Cambridge
Rowe, Johnstone & Beute (1974) *Phytopathology* 64: 1294-1297.

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