

Pineapple black rot (190)

Common Name

Pineapple black rot, water blister of pineapple (soft rot), white leaf spot, butt rot

Scientific Name

Ceratocystis paradoxa; it is also known by its asexual name, *Chalara paradoxa* or *Thielaviopsis paradoxa*.

Distribution

Asia, Africa, North, South and Central America, the Caribbean, Europe, Oceania. It is recorded from Australia, Fiji, French Polynesia, New Caledonia, Papua New Guinea, Samoa, Solomon Islands, and Vanuatu.

Hosts

Pineapple, cocoa (pod rot), coconut (stem bleeding), banana and plantain (black end or fruit rot), maize, mango, potato, sugarcane (pineapple disease, **see Fact Sheet no. 218**), sweetpotato (**see Fact Sheet no. 232**) and taro.

Symptoms & Life Cycle

A wound fungus; *Ceratocystis paradoxa* causes leaf spots (white leaf spot), basal (butt) rots and fruit rots (black rot or water blister) on pineapple (Photos 1&2).

On pineapple leaves, a small brown spot develops usually where leaves rub together in the wind. The spots grow rapidly during wet weather, up to 200 mm, reaching the leaf tip. If the weather turns dry, a cream, almost white, papery spot develops which has brown margins.

On the fruits, soft, watery rots occur, at first with a brittle outer shell. Later, the skin, flesh and core break down and the fruit leaks through the shell. Sometimes, only the fruit shell remains with a few black fibres inside, and collapses under slight pressure. The rots are often associated with wounds.

On the butt (base or bottom) of the crowns, slips and suckers, a soft, grey to black rot occurs before or immediately after planting. This develops into a cavity at the base of the stems leaving only fibres. When butt rots are severe, plants fail to establish properly, remain stunted and the older leaves die, but the young leaves remain firmly attached. Infected plants can be easily broken off at ground level.

The fungus survives as thick walled resting spores, called 'chlamydo spores', in soil and in the remains of the plants. Infection of pineapple is through wounds.

Wounds occur in the planting material when it is detached from the parent plant. Infections are particularly common when the crowns, slips and suckers are detached in wet weather and then stored in heaps. Infections, however, may not be seen at planting.

Similarly, fruits are infected through bruises, growth cracks or wounds made when they are detached. Disease development is worse if it is warm and wet at harvest. The name given to the disease, 'water blister', is meant to describe the association of rain and symptoms.

Impact

The leaf spots are of no economic importance. *Ceratocystis paradoxa* causes severe loss of planting material. Also, it is the major postharvest disease of fruit for the fresh-fruit market. The rots occur during transport and storage when refrigeration is not available. Rots do not occur in the field. In India, it is estimated that the disease causes a loss of about 10%.

Detection & inspection

Look for sets of pineapple (crowns, slips, suckers) that fail to establish properly, wilt or die. Look for butt rots - soft back rots, with a cavity at the base of the stem. On fruits, look for black soft watery rots under a brittle skin. Look for long white or cream-coloured leaf rots that spread to the leaf tip.



Photo 1. Internal symptoms of pineapple black rot, caused by *Ceratocystis paradoxa*.



Photo 2. Black rot of pineapple, *Ceratocystis paradoxa*.

Management

CULTURAL CONTROL

After harvesting fruits:

- Handle fruit carefully and avoid bruising. Fungal infections occur through even the smallest of wounds.
- Do not market sunburnt or damaged fruit, as they are likely to have cracks in the skin.
- Dip the fruit in a recommended fungicide and (if possible) store at 9°C; use of fungicide is important if harvests are made during wet weather.
- Maintain strict hygiene at packing sheds, collecting and burying any rejected fruits.

After harvesting plant parts for propagation:

- Do not leave pieces of the fruit attached to the crowns when removing them from the plants; otherwise, this could lead to rapid infection at the base of the crown.
- Treat the planting material with fungicide immediately after removal. Two products are registered in Australia: triadimenol and propiconazole (triazole fungicides).
- Store planting material on top of the plant rows or on the ground in single layers, with the butts exposed to the sun. If harvested in wet weather, treat with fungicide.
- Improve soil drainage, and do not plant during wet weather.

CHEMICAL CONTROL

Dip planting materials in the chemicals mentioned above, and use as directed on the products' labels.

When using a pesticide, always wear protective clothing and follow the instructions on the product label, such as dosage, timing of application, and pre-harvest interval. Recommendations will vary with the crop and system of cultivation. Expert advice on the most appropriate pesticide to use should always be sought from local agricultural authorities.

AUTHOR Graham Jackson

Information from *Diseases of fruit crops in Australia* (2009). Editors, Tony Cooke, et al. CSIRO Publishing. Photo 1 Kohler F, et al. (1997) *Diseases of cultivated crops in Pacific Island countries*. South Pacific Commission. Pirie Printers Pty Limited, Canberra, Australia. Photo 2 Anna L Snowden. Pineapple: Disease and symptoms. Vikaspedia.

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