



Information Sheet

9.7 Pineapple sett rot

Importance

Pineapple sett rot is caused by the soil-inhabiting fungus *Ceratocystis paradoxa*. It enters planted setts through the cut ends or damaged rind, and affects bud and root development, resulting in poor germination. The disease is favoured by conditions that delay germination (e.g. cold conditions, waterlogged soil, excessively dry soil and hot water treatment).

Symptoms

Poor germination and patchy growth in newly planted fields is often a sign of pineapple sett rot (Figure 1).

The internal tissue of infected setts turns red (Figure 2), and later a brownish-black colour (Figure 3). Cavities develop where the fungus produces a massive number of brown-black spores.

Root development is poor, buds fail to germinate, and those that do, may die or remain stunted (Figure 4).

In the early stages of rotting, the disease may be diagnosed by a strong fruity odour, much like an over-ripe pineapple. It should be noted that this odour is generally only present in early rots and is not always useful for diagnosis.



▲ Figures 1-2: Pineapple sett rot symptoms.



▲ Figures 3-5: Pineapple sett rot symptoms.

Spread and infection

The spores of the fungus are present in the soil. Spores may also be spread in the wind, run-off rain or irrigation water. The fungus multiplies in the soil in the presence of organic matter. The spores can survive in the soil for at least a year, and several months in infected plant material remaining in the field. Warm temperatures (~28 °C) favour sporulation and fungal growth.

The fungus enters the sett through the cut ends or damaged rind. It spreads rapidly through the sett tissue, slowing down temporarily at the nodes. Infection may delay or prevent the development of buds and roots, resulting in poor germination.

Insect damage to the rind and nodes of the sett is likely to increase the risk and extent of infection and damage.

Pineapple sett rot is likely to be a problem whenever germination of the seedcane is delayed due to:

- Cool or cold soils (<18°C)
- Dry soils
- Waterlogged soils
- Excessively deep planting
- Hot water treatment (HWT)

The disease occurs most frequently in fields planted from early autumn through early spring in the Coastal Hinterland and Midlands areas. It can also be a problem in the northern, irrigated areas when fields planted in the cooler months receive excessive rain or irrigation.

The disease is rarely a problem when growing conditions are good in spring and summer.

Effect on production

Pineapple sett rot may result in poor germination and patchy growth. Commercial fields may be gapped up with Certified or Approved Seedcane of the same variety, but in some cases, entire fields may need to be replanted.

Varietal susceptibility

All varieties may be affected if germination is delayed, but those that tend to germinate more slowly or are sensitive to HWT, such as N12, N17, N19 and N42, are more prone to infection. N36 planted under cold and wet or extremely hot and dry conditions may also germinate poorly and become infected.

Management strategies

Cultural

- Where possible, plant when the weather conditions are favourable for rapid germination and soil temperatures are above 18°C.
- Use healthy seedcane of the right age (Table 1).

Table 1: Recommended age of Certified or Approved Seedcane at harvest

Area	Maximum age at harvest
Irrigated North and KZN Coastal <500m above sea level	9 - 12 months
Midlands >500m above sea level	12 - 18 months

- Setts should have at least three nodes. These act as a barrier to infection and can slow the spread of the fungus through the sett. This can protect the buds sufficiently until they germinate. Infection through short setts with one or two nodes can be rapid, resulting in germination failure when conditions are less favourable (Figure 5).
- Where possible, apply water or organic matter such as filtercake in the furrow when planting under rainfed conditions.
- Avoid excessively deep planting.
- Ensure the soil has good tilth and there is good soil-sett contact.
- Ensure knives used for cutting setts are sharp to ensure the seedcane is cut cleanly and preventing cracking of the setts. This will reduce the number of entry points for soil-borne fungi.
- When hot water treating conventional seedcane, ensure that the water temperature does not exceed 50.5°C and the duration of treatment does not exceed 2 hours.

Chemical

A fungicide soak or in-furrow spray can provide protection against pineapple sett rot if delays in germination are expected. A soak that ensures complete treatment of the sett is more effective than spraying seedcane in the furrow. For in-furrow treatments in commercial fields, fungicides must only be applied once whole stalks have been cut into setts to provide some protection of the cut ends.

Registered fungicides containing benomyl can be used at the following rates:

- Hot water treatment tank 37.5g per 100L
- Seedcane soak (5-10 min) 75g per 100L
- In-furrow spray or planter 400g in 400L water per ha

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