

## Carrot black rot (204)

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### Common Name

Carrot black rot

### Scientific Name

*Alternaria radicina*; also known as *Stemphylium radicum*.

### Distribution

Asia, Africa (restricted), North and South America, Europe, Oceania. It is recorded from New Caledonia.

### Hosts

Carrot. There have been reports of this fungus infecting many members of the carrot family, including celery, parsley, parsnip, dill and fennel, but some taxonomists dispute these findings, and believe that only the cultivated carrot, *Daucus carota* subsp. *sativus*, is host to *Alternaria radicina*.

### Symptoms & Life Cycle

The fungus causes damping-off, leaf and crown infection, flower blight and a storage rot. The leaf stalks are infected first, and this can lead to crown, root and, occasionally, leaf infection.

On the roots, slightly sunken black spots occur over the surface of the root covered in rust-brown fungal growth in which spores develop (Photo 1). As the decay spreads, the areas of rot deepen and the roots become unfit for consumption.

Spread occurs on and in seed. Survival is in crop remains and also by resistant fungal structures called microsclerotia made from the compact cottony growth of the fungus; these can survive in soil for several years.

### Impact

*Alternaria radicina* causes damage in three ways: (i) seed infections cause damping off (**see Fact Sheet no. 047**), and this leads to poor crop establishment; (ii) crown infections - the area between leaf stalks and root, and (iii) rots in storage, even though there are no sign of infections at harvest. However, the losses caused by this fungus are not well documented.

### Detection & inspection

Look for infections which occur first on the petioles before spreading to the crown, root and leaves. Look for the disease in storage causing black sunken rots. This disease may be difficult to distinguish from other *Alternaria* species, e.g., *Alternaria dauci*, which causes dark grey to brown, angular spots on the leaves (**see Fact Sheet no. 135**), and from fungi that cause root rots in storage, e.g., *Thielaviopsis basicola* (black root rot). Microscopic examination of the spores produced by these fungi is needed to tell them apart.

### Management

#### CULTURAL CONTROL

Before planting:

- Ensure that commercial seed is free from infection of *Alternaria radicina*.
- If this cannot be guaranteed, or if growers are keeping their own seed, treat it in hot water (50°C for 30 minutes) or in hot bleach (0.1% sodium hypochlorite for 30 minutes).
- Practice crop rotation. Leave 3-4 years before planting on land where the disease has been identified. Between crops of carrot, do not plant land with crops related to carrot (see under Hosts).

After harvest:

- Collect and burn or bury as much of the crop as possible.

#### CHEMICAL CONTROL

This is not an option for this disease.



Photo 1. Sunken black rots on carrot caused by black rot, *Alternaria radicina*.

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Photo 1 Kohler F, Pellegrin F, Jackson G, McKenzie E (1997) *Diseases of cultivated crops in Pacific Island countries*. South Pacific Commission. Pirie Printers Pty Limited, Canberra, Australia). Information from *Diseases of vegetable crops in Australia* (2010). Editors, Denis Persley, Tony Cooke, Susan House. CSIRO Publishing.

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