

## 19 Fiddlehead (ostrich fern)

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### Figure 19.1

#### Fungal diseases

- 19.1 Gangrene
- 19.2 Other fungal diseases
  - Leaf blotch
  - Rust

#### Additional references

## FUNGAL DISEASES

### ► 19.1 Gangrene *Fig. 19.1*

*Phoma matteuccicola* von Aderkas et al.

Gangrene is the most important disease of ostrich fern. It is frequently observed in the spring when wet soil, night frosts and low temperatures favor disease development. Infected fiddleheads are unsaleable.

**Symptoms** Small black patches appear on the frond rachis as it emerges in the fiddlehead stage. These patches are usually most apparent on the first flush of fiddleheads in the spring. The rachis can be completely blackened and weakened (*19.1*). The frond rachillae and pinnules are not affected. The black lesions caused by *Phoma* infection can be present on both fresh and frozen fiddleheads.

**Causal agent** *Phoma matteuccicola* produces noticeable pycnidia with extruding masses of conidia. The thin-walled, spherical pycnidia usually produce two-celled conidia, but in culture a majority of the spores are one-celled. The two-celled conidia are up to 16 µm long by 1.4 to 3 µm wide. The conidia are guttulate and arise from doliform or ampulliform, phialidic, conidiogenous cells in the inner layer of the pycnidium.

The fungus can be isolated from diseased tissue using routine techniques. Cultures on agar media are regular in outline and never scalloped. The mycelium is whitish-gray and the medium turns yellowish brown below the mycelial mat. The culture margins react positively but weakly to Boerema's sodium hydroxide test for Antibiotic E. These characteristics are similar to those of the potato pathogen *Phoma exigua* var. *foveata*, which is not known to occur in North America. *Phoma matteuccicola* is not pathogenic on potato, and it has a different pigment chemistry, grows more slowly in culture, and forms less aerial mycelium than *P. exigua* var. *foveata*.

**Disease cycle** The pathogen overwinters in the stems, roots and sub-meristematic tissue in the crown of the fern sporophyte. It can also survive in the soil and on decomposing leaves. The mycelium grows through the xylem to newly emerging fiddleheads and through rhizomes to other crowns in the same clone in the spring. The infected fronds become weak and break near the base. Severely infected crowns may die. The pathogen does not completely destroy fern stands.

#### Management

**Cultural practices** — All plant residues, including leaf litter and infected plants should be removed and buried or composted. Straw mulch or sawdust plus wood shavings or chips should be added in late autumn to protect exposed crowns during the winter and early spring.

#### Selected references

- Boerema, G. H. 1976. The *Phoma* species studied in culture by Dr. R.W.G. Dennis. *Trans. Br. Mycol. Soc.* 67:289-319.  
von Aderkas, P., and D. Brewer. 1983. Gangrene of the ostrich fern caused by *Phoma exigua* var. *foveata*. *Can. J. Plant Pathol.* 5:164-167.  
von Aderkas, P., J. de Gruyter, M.E. Noordeloos and D.B. Strongman. 1992. *Phoma matteuccicola* sp. nov., the causal agent of gangrene disease of ostrich fern. *Can. J. Plant Pathol.* 14:227-228.

(Original by R.K. Prange)

### ► 19.2 Other fungal diseases

- Leaf blotch *Taphrina struthiopteris* Nishida
- Rust *Uredinopsis struthiopteridis* StörmenDietel

These diseases are of minor importance on ostrich fern in Canada.

## ADDITIONAL REFERENCES

- Roberts-Pichette, P. 1971. *Fiddleheads in New Brunswick*. Project 33906, New Brunswick Dep. Agric., Fredericton. 33 pp.