



Canadian Food  
Inspection Agency

Agence canadienne  
d'inspection des aliments

# Pest categorization

*Botryosphaeria corticis* (Demaree & M.S. Wilcox) von  
Arx & E. Müller

Botryosphaeria stem canker



## Table of contents

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Background.....	3
Identity of organism .....	4
Presence in the PRA area .....	4
Regulatory status.....	5
Potential for establishment and spread in the PRA area .....	5
Potential for economic and environmental consequences in the PRA area .....	6
Conclusion .....	7
References.....	8

## Background

The purpose of this categorization is to determine whether *Botryosphaeria corticis* (Botryosphaeria stem canker) has the potential to satisfy the criteria in the definition for a quarantine pest. The method used by the CFIA to initiate and conduct this categorization is consistent with international guidelines set by the International Plant Protection Convention (IPPC). Definitions follow those listed in the IPPC's *Glossary of phytosanitary terms*.

**Initiation point:** This categorization was identified via a Commodity Risk Assessment on blueberry plants from Canada to the UK for the Jens-Georg Unger Plant Health Fellowship project, funded by the European and Mediterranean Plant Protection Organisation (EPPO). This project was led by a visiting scientist from the UK Department for the Environment, Food and Rural Affairs, utilising the tools and templates of the Canadian Food Inspection Agency and coordinating with experienced Canadian risk assessors.

**Identification of the PRA area:** The PRA area is all of the UK.

**Current regulatory status:** *Botryosphaeria corticis* is not currently regulated as a pest in the UK. However, it is a quarantine pest in Chile and in New Zealand (EPPO 2022; MPI 2022).

## Identity of organism

**Name:** *Botryosphaeria corticis* (Demaree & M.S.Wilcox) von Arx & E.Müller (Botryosphaeriaceae)

**Synonyms:** *Physalospora corticis* Demaree & M.S.Wilcox

**English common names:** Dieback of blueberry, stem canker of blueberry, Botryosphaeria stem canker, blueberry cane canker

**French common names:** N/A

### 1. Is the organism clearly a single taxonomic entity and can it be adequately distinguished from other entities of the same rank?

**Yes**

If no

**Go to 2**

Go to 11

*Botryosphaeria corticis* is distinguished from its closest relative and fellow blueberry pathogen *B. dothidea* by having larger asexual and sexual spores. The sexual spore-bearing cells (asci) are club-shaped with two wall layers and the spores themselves are translucent and thin-walled. Colonies on agar are initially white before turning olive green with clumps of loosely aggregated hyphae (Phillips *et al.* 2006). Now that *B. corticis* has been sequenced, it can also be identified by various genomic features (Wu *et al.* 2022).

## Presence in the PRA area

### 2. Does the organism occur in the PRA area?

If yes

**No**

Go to 3

**Go to 5**

*Botryosphaeria corticis* is not known to occur in the UK (GBIF 2022).

### 3. Is the organism widely distributed in the PRA area?

If yes

If no

Go to 11

Go to 4

## Regulatory status

### 4. Is the organism under official control in the PRA area or is it a potential candidate for official control?

If yes Go to 5  
If no Go to 11

## Potential for establishment and spread in the PRA area

### 5. Does the PRA area have climatic conditions suitable for establishment and spread of the organism?

If yes Go to 6  
**No Go to 11**

### 6. Does the PRA area have ecological conditions suitable for establishment and spread of the organism?

If yes Go to 7  
If no Go to 11

Symptoms of *Botryosphaeria corticis* was first reported around 80 years ago in North Carolina (Demaree and Wilcox 1942). It is also present in South Carolina, Georgia, Florida, Alabama and Mississippi as well as New Jersey in the US (Polashock *et al.* 2017). This fungus has recently been reported in other countries, namely in Canada, China and French Guiana (CPDS 2020; GBIF 2022; Zhuang *et al.* 2021). In Canada and French Guiana, there is a single report with little background information (CPDS 2020; GBIF 2022). Therefore, it is not certain whether *B. corticis* has been able to establish in these regions. It is possible in both cases that this fungus has spread from the US via trade but been unable to establish or spread successfully. However, it seems likely that *B. corticis* has established in China given it was found on a host native to China (Zhuang *et al.* 2021).

Symptoms of *Botryosphaeria corticis* vary between blueberry varieties. On susceptible varieties, large swollen cankers develop on stems with deep fissures and cracks. Cankers are absent or much smaller in

less susceptible varieties. In severe cases, cankers may girdle or kill the stem (Milholland 1972; Polashock *et al.* 2017). This fungus is known for attacking wild and cultivated blueberry species (including *Vaccinium corymbosum*, *V. ashei* and *V. myrsinites*) (Lyrene and Sherman 1980; Milholland 1972; Phillips *et al.* 2006).

Spores are released by this fungus during wet weather and spread by wind (Polashock *et al.* 2017). In addition, temperature has been shown to affect sporulation, fungal germination and fungal growth on blueberry plants. The optimum temperature for fungal growth in culture and canker development is 27°C. These processes are reduced below this temperature to the extent that a constant low temperature of 16°C is sufficient to significantly restrict *Botryosphaeria* stem canker occurring in susceptible blueberry varieties and no fungal growth occurs at 10°C (Milholland 1972). Given that the average annual temperature of the UK is between 5-13°C (MetOffice 2022), the epidemiological conditions for *B. corticis* are likely to suppress the successful establishment and spread of this pathogen in countries with a colder climate, such as the UK or Canada.

## Potential for economic and environmental consequences in the PRA area

### 7. Is the organism a known pest in its area of current distribution?

- If yes Go to 9
- If no Go to 8

### 8. Does the organism have intrinsic attributes that indicate that it could cause significant harm to plants?

- If yes Go to 9
- If no Go to 11

### 9. With specific reference to the plants or habitats which occur in the PRA area, could the organism by itself, or acting as a vector, cause significant damage or loss to plants leading to negative economic, environmental, societal or export market impacts?

- If yes Go to 10
- If no Go to 11

## Conclusion

10. This organism has the potential to satisfy the definition of a quarantine pest.

**11. This organism does not fulfill all of the criteria for a quarantine pest.**

*Botryosphaeria* stem canker has been one of the most important limitations of northern highbush blueberry production in North Carolina. In addition, this fungus is currently absent from the UK and appears to be capable of spreading to other countries from its native distribution in North America. However, it is uncertain whether this fungus has successfully established in these countries. There is also no evidence to suggest this fungus can cause serious economic, social and environmental damage, in countries with colder climates such as Canada or the UK. Given its distribution and prevalence in southeastern USA, and its epidemiological requirements, *Botryosphaeria corticis* appears to be a warm climate organism and is not likely to establish and become a serious pathogen in the UK.

Therefore, this fungus does not fulfill all of the criteria for a quarantine pest. This conclusion will need to be re-assessed however, if damage is reported in Canada or in any country with a colder climate like the UK. In addition, this categorisation may need to be reviewed if the UK climate warms significantly in future with the continuation of climate change.

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