ASCOHYTA (MYCOSPHAERELLA) BLIGHT
is the most widespread and economically
damaging foliar disease in Manitoba field
peas. Infection can lead to reduction in
field pea grade, productivity and even
seed yield, if severe widespread infection
occurs early in the growing season. Of
the pea fields surveyed in Manitoba
for root and foliar diseases in 2017,
mycosphaerella blight was present in all
of them. On a scale of 0 (no disease) to 9
(whole plant severely diseased), average
disease severity was 4.5 and ranged from
2.7 to 7.2.1

DISEASE COMPLEX
The Ascochyta disease complex in
Canadian field peas is made up of
three fungal pathogens: *Ascochyta pisi*,
*Ascochyta pinodes* and *Phoma pinodella*,
that together can cause leaf, stem and
pod spot, stem lesions and foot rot
symptoms.2 Ascochyta blight, otherwise
known as mycosphaerella blight, is
the disease caused by *Mycosphaerella
pinodes*, the sexual stage of the *A. pinodes*
pathogen. It is the most common field
pea disease in western Canada.

DISEASE CYCLE
Field peas are the single host crop of
mycosphaerella blight, caused by a
pathogen that can be stubble-, air-, soil-
and seed-borne. *A. pinodes* overwinters
on pea stubble and residue, the primary
source of inoculum, and can survive on
stubble or in the soil as resting spores
for many years. Air-borne spores are
released and spread by rain splash to
plants nearby, or by wind to plants up to
several kilometres away. This creates a
disease risk even in fields where no field
peas have been grown previously.

Plant shoots can also be directly
infected through exposure to resting
spores in soil or from fungus on
seeds that infects emerging seedlings.
Foot lesions develop from infected
seed, though seed is considered a
minor inoculum source and risk
of mycosphaerella blight infection
transferring from seed to seedling is low.

DISEASE DEVELOPMENT
Cool, wet conditions and short crop
rotations encourage the initiation of
infection and disease development. Field
pea plants are infected throughout the
growing season, with the production
and release of new spores during wet
periods. Mycosphaerella blight progresses
upwards from the bottom of the plant,
where symptoms appear on lower
leaves, branches and the stem. Frequent
precipitation and humid conditions in the
lower canopy often cause greater disease
severity.

Along with weather conditions, timing
of initial infection influences the effect
of mycosphaerella blight on crop yield.
Bloom to early/mid-pod development
is the most damaging time for infection
establishment.

SCOUTING
Scouting for mycosphaerella blight
symptoms in field peas should occur
from the 10th node stage (V10) during
the vegetative pea stages to the beginning
bloom stage (R2) (Figure 1) (see MPSG’s
Field Pea Growth Staging Guide for all field
pea stages). This typically occurs from
the middle of June to the end of July. Risk
of yield loss increases when symptoms
are higher than the bottom third of the
plant canopy by the R2 stage, so any
upward movement of symptoms in the
crop canopy should be surveyed closely.
Scouting is especially important in fields
where peas have recently been grown, as
disease risk is greater in these fields.

SYMPTOMS
Mycosphaerella blight can infect field
pea leaves, stems, flowers, pods, seeds
and seedlings, depending on the severity
and primary source of disease infection.
Symptoms are described as follows:

Minor symptoms
*Leaf lesions* (Figure 2)

- Begin as small, irregular purplish-
brown/black spots or flecks
- Can become large, circular brown/
  brownish-black lesions with concentric
  rings (target-like appearance)
- Either one or both types of lesions may
  be present
- May grow and merge as the disease
  progresses, covering entire leaves; dry,
  disease-covered leaves remain attached
to the stem

Figure 1. Field pea at beginning
bloom stage (R2).
• Flower infection causes blossoms to drop, decreasing the number of potential pods formed

**Severe symptoms**

**Stem lesions**
- Purple/bluish-black stem lesions, often at the base of the plant
- May develop below the soil-line on the upper root
- May appear at nodes, elongating 10 mm (3/8 in.) above and below

**Foot rot**
- Exhibits stem girdling in seedlings
- Weakens the stem when infection is severe
- May cause lodging and premature senescence

**Pod lesions**
- Small, purplish-black or brown flecks or lesions
- Develop from continuous moist conditions or lodging
- May cause pods to shrink or dry-down early when infection is severe, causing seed quality loss due to seed shrinkage and dark brown discoloration

Due to the similarities between symptoms of mycosphaerella blight and bacterial blight (Figure 3), a blight initiated by the infection of pea seed and uncontrolled by fungicides, proper identification is crucial. Like mycosphaerella blight, bacterial blight symptoms occur on field pea leaves, stems, petioles and pods. However, bacterial blight lesions are typically brown and shiny, have a water-soaked, greasy appearance and can appear translucent.

A detailed resource to distinguish the two diseases is available on the NDSU Carrington Research Extension website.3

**FOLIAR FUNGICIDE APPLICATION DECISIONS AND TIMING**

Foliar fungicides aim to protect healthy green plant material, but they are unable to reverse symptoms or repair plants damaged by foot rot. Therefore, the application of foliar fungicides before or during the early stages of mycosphaerella blight development can help minimize yield and quality loss from lodging caused by severe stem lesions. However, there are many factors that should be considered before applying foliar fungicide. The new MPSG Fungicide Decision Worksheet for Managing Mycosphaerella Blight in Field Peas can be used as a tool to assess fungicide needs according to current crop conditions and disease symptoms. In order to use this tool effectively, crop and disease assessments should occur during bi-weekly field inspections. Also consider expected yield and crop value to justify fungicide cost.

**Ideal application timing for foliar fungicide on field peas is beginning bloom (R2). Adequate canopy penetration and leaf coverage during the first application are crucial. Typically, a single fungicide application effectively controls mycosphaerella blight. If symptoms spread upward in the crop canopy and moist conditions continue, a second foliar application 10–14 days later using a different fungicide group is warranted. Although resistance to fungicides typically used to control mycosphaerella blight has not been reported in Manitoba, research suggests that insensitivity of *M. pinodes* to the strobilurin (QoI) fungicide pyraclostrobin may be emerging in parts of Saskatchewan and Alberta.4**

**ADDITIONAL CONTROL TIPS**

Other mycosphaerella blight management practices should be considered when growing field peas and can be used together with foliar fungicide application. These practices are:
- Follow a minimum five-year crop rotation — or a six- to eight-year crop rotation if risk of Aphanomyces infection is present.
- Grow field pea varieties that have at least ‘fair’ disease resistance to mycosphaerella blight.
- Use disease-free seed or treat seed with a recommended fungicide if >10% of seed is infected with mycosphaerella blight.
- Avoid planting peas near a previously infected field.
- Work crop residue into field immediately following harvest.

**References**