

CANOLA DISEASE SCOUTING GUIDE



PLANT INFECTION AND SCOUTING SCHEDULE BY PLANT GROWTH STAGE						
Pre-Emergent	Seedling	Rosette	Budding	Flowering	Ripening	Post-Harvest
					Alternaria Black Spot	
					Aster Yellows	
					Blackleg	
					Clubroot	
					Late Season Foot Rot and Root Rot	
					Sclerotinia Stem Rot	
	Seedling Disease Complex					
					Verticillium Stripe	

Plant infection occurs
 Best time to scout

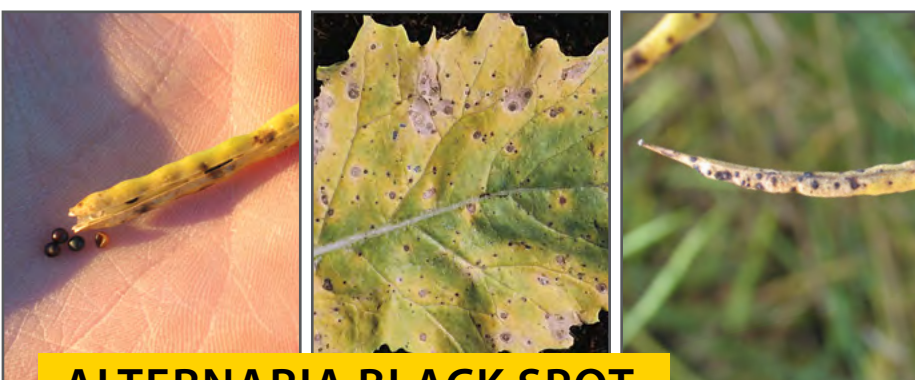
For more information on appropriate thresholds and managing canola disease, contact your local Canola Council of Canada agronomy specialist, sign up for our Canola Watch e-newsletter at canolacouncil.org, or call toll-free at (866) 834-4378.

ECONOMIC MANAGEMENT OF DISEASES

Effective and economical management of all diseases requires decisive action prior to symptom development.

Therefore, making accurate assessments of potential disease risk in each field is very important. Better risk assessment will help ensure that fungicides are applied only when the likelihood of a positive economic return is high. Even though most management decisions are made prior to symptom development, scouting for disease symptoms is still important because it helps determine which diseases are present in each field, if they are getting

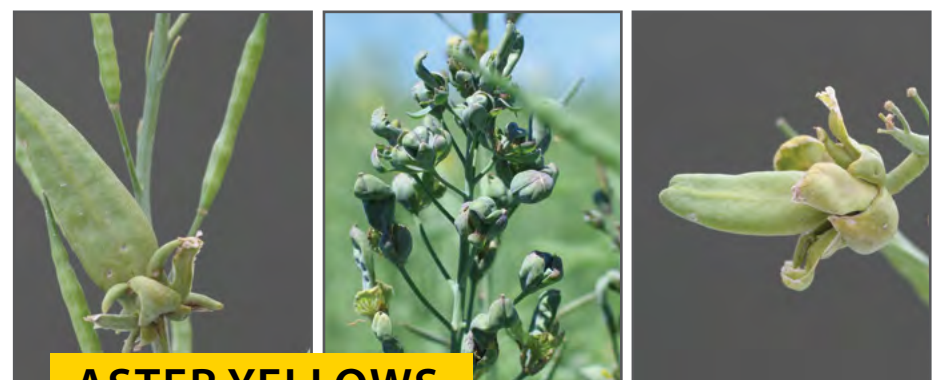
worse, or whether the management tools used were effective. This card can help improve the accuracy of risk assessments through enhanced symptom recognition, better understanding of risk factors and improved identification of spore-producing structures and late-season infections. Accurate identification and long-term record keeping of disease information for each field, including the percent of infection and severity of symptoms, will help growers better predict risk and help evaluate, prioritize and improve disease management programs in their fields.



ALTERNARIA BLACK SPOT

Symptoms and conducive conditions:

- Infected canola seeds may rot in the ground or form small, light brown lesions with yellow halos on the cotyledons that can soon turn black from spore masses (under humid conditions) and act as a source of infection for other parts of the plant
- Infected pods may ripen prematurely and shatter while the crop is standing or in the swath
- In severe outbreaks, the upper part of the stems and pods wither and exhibit sunken, dark brown to black circular lesions
- Leaf lesions can be grey under moist conditions and either grey with a purplish or black border or entirely black under conditions favourable for the disease



ASTER YELLOWS

Symptoms and conducive conditions:

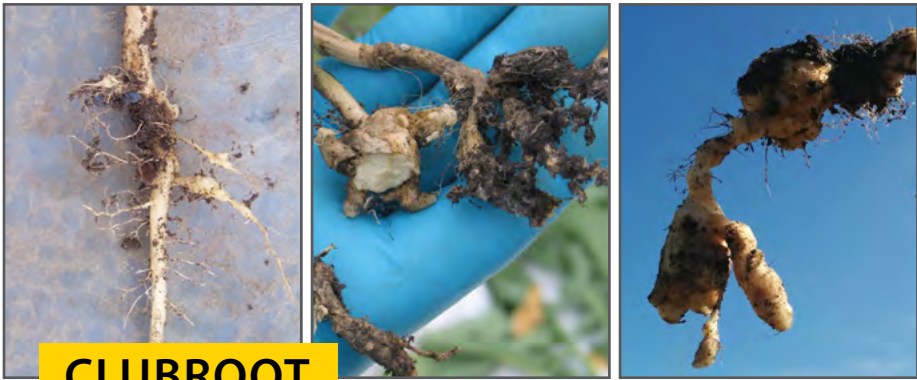
- Sterile, green, leaf-like structures replace the flower and round or oval, blue-green, hollow, flattened bladder-like structures replace seed-bearing pods
- Infected plants turn a blue-green colour and leaves will show a red or purple tinge late in the season. Plants might be conspicuously taller than the rest of the crop
- Watch for the disease when early-season southern winds bring up AY-infected leafhoppers from the U.S. and conditions in a field are favourable for leafhoppers



BLACKLEG

Symptoms and conducive conditions:

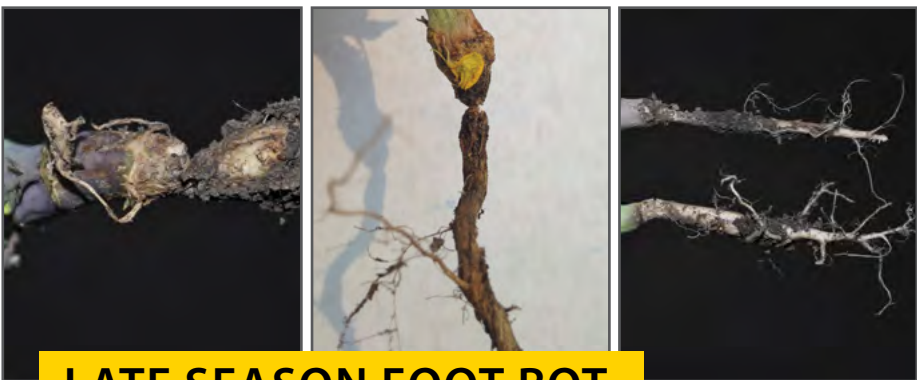
- Disease symptoms may appear first on leaves as dirty white, round to irregularly-shaped lesions, usually dotted with numerous small, black pycnidia (pepper-like, spore-bearing structures)
- Fungus advances internally from leaf to stem and may form lesions that are white or grey, potentially with a dark border and pycnidia within
- Stem lesions at the base of the plant appear as a dry rot which may contain pycnidia and/or be pinching at the soil surface
- The best method to identify blackleg is to cut a cross-section of the stem at the base of the plant (at the soil surface) and check if it reveals black and brown infected tissue
- Pseudothecia (black bodies slightly larger than pycnidia) may form on canola residue in the following years
- Warm, wet spring conditions followed by dry conditions at harvest are favourable for the development of this disease, along with the presence of host plants over consecutive years



CLUBROOT

Symptoms and conducive conditions:

- Infected plants will have deformed, club-shaped swellings on plant roots called "galls." These galls restrict water and nutrient uptake which may result in above-ground symptoms such as premature ripening, wilting, yellowing or plant death
- Warm, wet conditions in infested soils are favourable for this disease, as well as acidic soils, high spore loads and the continual occurrence of susceptible plants
- For a detailed description of this disease see the Canola Council of Canada's publication, "All About Clubroot"



LATE SEASON FOOT ROT AND ROOT ROT

Symptoms and conducive conditions:

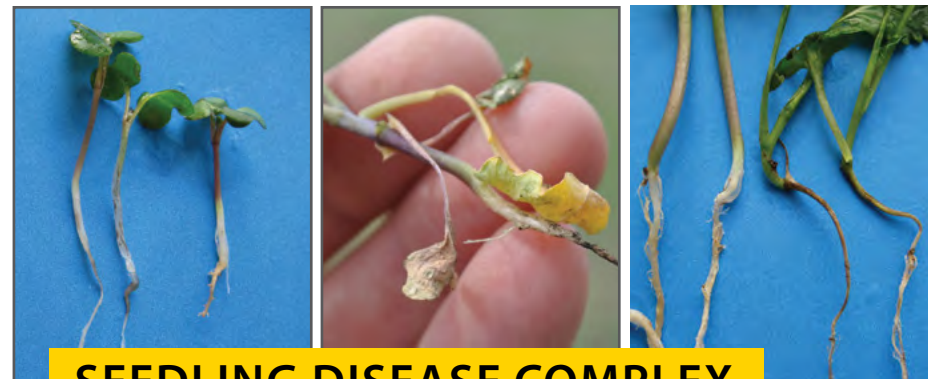
- Brown girdling root rot exhibits light brown lesions on the taproot and at larger root bases as well as girdling of the taproots, which may result in only short taproot stubs being left
- Foot rot causes hard brown lesions at the stem base with salmon-coloured spore masses inside
- Root rot symptoms vary in shape and colour and can include: a light grey, oval lesion of the upper taproot; a dark greying or blackening of the lower taproot and internal tissue; a light brown, soft, diffuse taproot lesion; or a dark brown, sunken, sharply defined taproot lesion
- When pulled from the ground, the plant will frequently break at or just below the soil surface
- Moist soils, root maggot feeding (which makes the plant more susceptible) and perpetual occurrence of susceptible plants are favourable conditions for these diseases



SCLEROTINIA STEM ROT

Symptoms and conducive conditions:

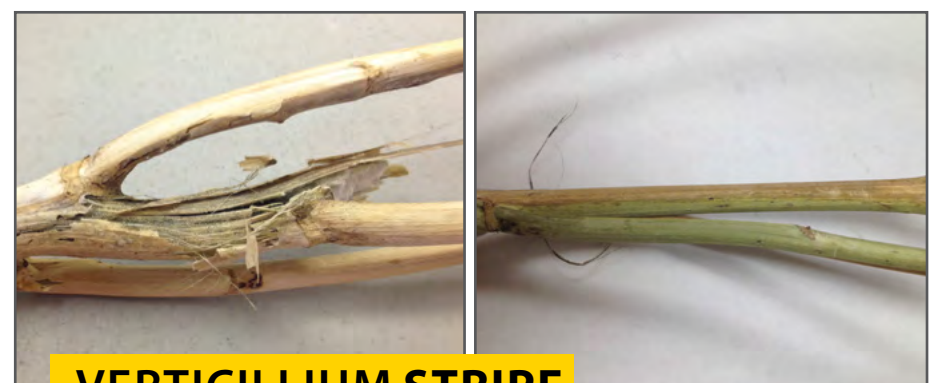
- When leaves are wet, lesions are soft, watery and brown in colour. When dry, they are brown and papery, crumbling at the touch
- Stem lesions exhibit similar symptoms as leaves, but near maturity the expanded lesions become grey-white. Plants with girdled stems wilt, ripen prematurely and are likely to lodge
- The stems of infected plants eventually bleach, taking on a whitish appearance, and tend to shred and shatter very easily, revealing a white moldy growth and small (less than 2 cm), cylindrical, hard, black resting bodies called sclerotia
- These sclerotia may also occur on the surface of infected stems under moist conditions
- Conditions that are favourable to the development of this disease include: warm, dense crop canopies; high moisture conditions; and saturated soil in the early and mid-season (especially at bolting and early flowering)



SEEDLING DISEASE COMPLEX

Symptoms and conducive conditions:

- Patchy or uneven emergence. Carefully digging up seeds reveals soft pulpy, ungerminated seeds, or seedlings that have begun to decay prior to emergence
- Seedlings that emerge may initially appear healthy, but their roots may decay soon after, or the hypocotyl can become constricted and wiry (wirestem disease)
- To verify, wash the soil off the roots and check with a magnifying glass. Compare with seedlings showing strong emergence
- Conducive conditions for this disease include factors that contribute to slow emergence, such as dry, wet or cold conditions and the continual occurrence of susceptible plants



VERTICILLIUM STRIPE

Symptoms and conducive conditions:

- The crop will show signs of stunting and premature ripening
- Faint black (vertical) striping can be seen on the stems which, when rubbed, can appear darker and more obvious. By peeling back the epidermis and outer cortex of the stem, blackening can be seen on the inside of the stem, eventually followed by microsclerotia later in the growing season
- Microsclerotia resemble ground pepper in appearance and remain on the plant stem well into the fall when they are released into the soil once the stems decay
- Symptoms of this disease can be noticed on the leaves and pods but are primarily noticed on the stem and roots and will vary according to plant age and environmental factors
- This disease can have the most impact in hot, dry conditions when the plant is already stressed and can persist when host species such as wild mustard are continually present in fields
- Moist conditions early in the growing season followed by hot, dry or stress conditions near maturity are favourable to this disease