

# 2020 Tech Bulletin

## What is Verticillium stripe?

*Verticillium longisporum* is a soil-borne fungal pathogen responsible for verticillium stripe disease, previously known as verticillium wilt, in canola. It is a disease agent of particular concern to the canola industry worldwide and was first reported in Canada in 2014 on diseased canola plants from Manitoba.

A survey by CFIA in 2015 reported *V. longisporum* to be widespread in soils across Western and Central Canada. *In planta* testing confirmed verticillium stripe disease development from the fungal isolates. Since that time, provincial surveys have shown a westward spread, with the latest surveys in 2023 finding presence in 0.3% of Alberta fields, 7.8% of Saskatchewan fields, and 29% of Manitoba fields.

The distinctive symptoms of verticillium stripe are:

- wilting
- leaf chlorosis/yellowing
- early ripening
- stunted plants
- stem necrosis producing a characteristic striped pattern whereby one half is green and healthy while the other half is discoloured and drying.
- shredding of stem tissue
- black speckling in outer layers of stem
- grayish starburst pattern seen in cross-cuts of stem at base of plant

Microsclerotia, resembling grains of ground pepper, form in the stem as the plant reaches maturity. After harvest, these may fall or are released into the soil as the plant tissue breaks down. They are further dispersed by water, or in soil and plant debris carried by wind, equipment, animals, and people. *V. longisporum* microsclerotia overwinter in the soil and can survive up to 15 years. In subsequent canola crops, the fungus infects through the roots of the plant, then moves up into the stem through the xylem. Yield losses of 10-50% have been reported in Europe

### Management

There are no foliar or seed treatment fungicides currently registered to control verticillium stripe in canola in Canada, and there is no characterized host resistance in canola varieties.

### How to Identify Verticillium Stripe:

<https://www.canolacouncil.org/canola-watch/fundamentals/verticillium-stripe-identification-and-management/>

<https://www.canolacouncil.org/canola-encyclopedia/diseases/verticillium-stripe/>



Root cross-section of plants prior to harvest. Verticillium stripe (left), blackleg (middle), and healthy plant (right)



## Scouting & Testing

Any plants of concern can be submitted to the lab for testing.

### Sample requirements:

- Stalk cut just above the root to a length of about 10 inches
- Collect stalks from areas of concern in the field
- Place stalks in a paper bag with field and grower information on the outside, including date
- Send to the lab in a cardboard box to prevent damage to the sample.

Verticillium stripe can be present alongside other diseases including blackleg, clubroot, sclerotinia, grey stem and fusarium wilt. *Verticillium longisporum* is a slower growing fungal species, which can be outcompeted in plate tests depending on the other fungi that may be present. DNA testing for *V. longisporum* is recommended for its fast, sensitive, and species-specific diagnosis.

Samples submitted for blackleg testing are visually assessed for possible verticillium stripe infection. Our experienced disease diagnosticians will reach out to discuss additional testing if symptoms or suspicious colonies are noted.

If you have questions about this test, or other testing options available please contact us at [support@2020seedlabs.ca](mailto:support@2020seedlabs.ca)

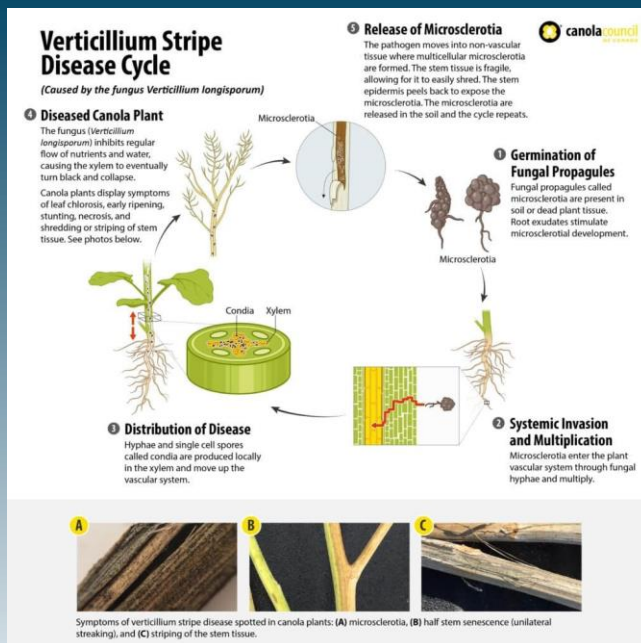
### Additional Resources:

#### Is it Verticillium strip or blackleg?

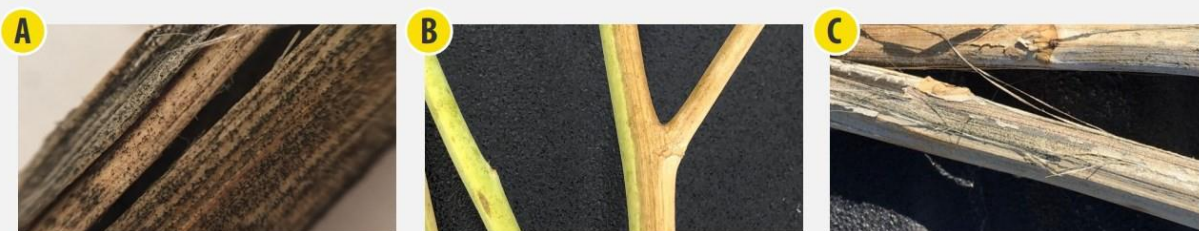
<https://www.canolacouncil.org/download/130/agronomy-guides/28744/verticillium-stripe-blackleg-resource-v5>

#### Verticillium Stripe - Canola Encyclopedia

<https://www.canolacouncil.org/canola-encyclopedia/diseases/verticillium-stripe/>



<https://www.canolacouncil.org/>



Symptoms of verticillium stripe disease spotted in canola plants: (A) microsclerotia, (B) half stem senescence (unilateral streaking), and (C) striping of the stem tissue.

<https://www.canolacouncil.org/>

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