

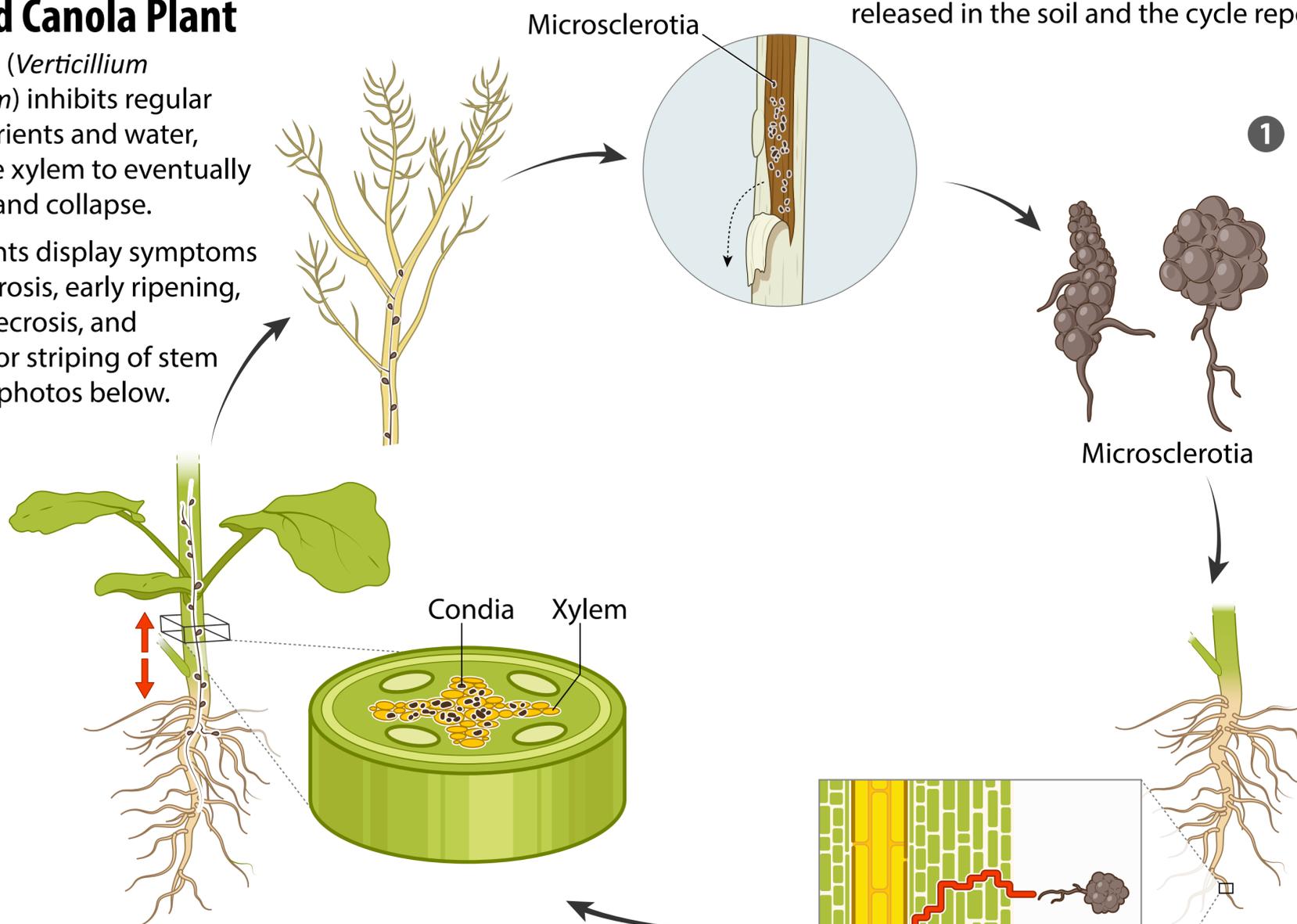
# Verticillium Stripe Disease Cycle

(Caused by the fungus *Verticillium longisporum*)

## 4 Diseased Canola Plant

The fungus (*Verticillium longisporum*) inhibits regular flow of nutrients and water, causing the xylem to eventually turn black and collapse.

Canola plants display symptoms of leaf chlorosis, early ripening, stunting, necrosis, and shredding or striping of stem tissue. See photos below.



## 3 Distribution of Disease

Hyphae and single cell spores called conidia are produced locally in the xylem and move up the vascular system.

## 5 Release of Microsclerotia

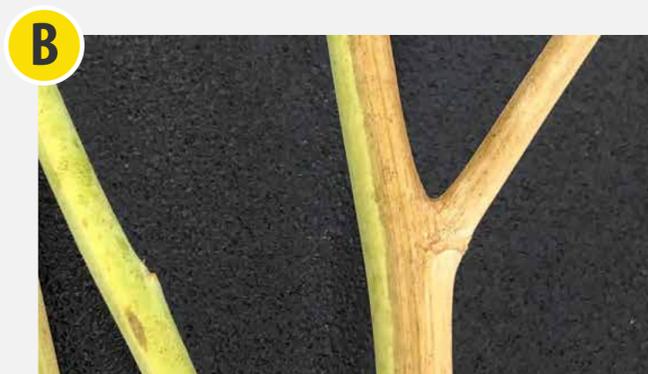
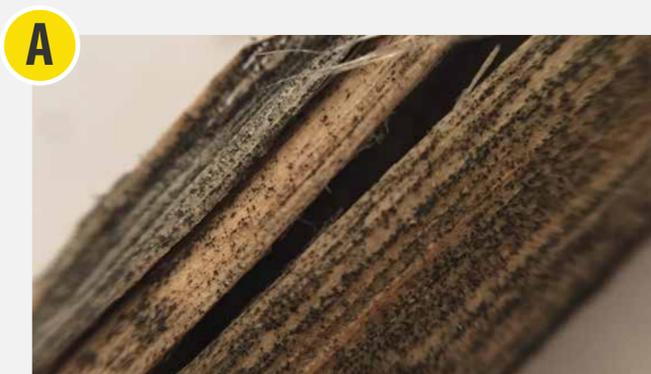
The pathogen moves into non-vascular tissue where multicellular microsclerotia are formed. The stem tissue is fragile, allowing for it to easily shred. The stem epidermis peels back to expose the microsclerotia. The microsclerotia are released in the soil and the cycle repeats.

## 1 Germination of Fungal Propagules

Fungal propagules called microsclerotia are present in soil or dead plant tissue. Root exudates stimulate microsclerotial development.

## 2 Systemic Invasion and Multiplication

Microsclerotia enter the plant vascular system through fungal hyphae and multiply.



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