



Phoma lingam (sexual stage: *Leptosphaeria maculans*, syn. *Plenodomus lingam*) and *Leptosphaeria biglobosa* are fungi that cause black leg (also known as Phoma stem canker or Phoma dry rot) on cruciferous crops including *Brassica* species (broccoli, Brussels sprouts, cabbage, kale, mustard greens, rutabaga, turnip, etc.), *Eruca sativa* (arugula), *Raphanus sativus* (radish and daikon), and *Sinapis alba* (white and yellow mustard). These fungi can infect seeds if mother plants are diseased, and can survive for years on infected seeds. Use of seed certified as free of black leg fungi is crucial to prevent outbreaks of black leg or its introduction to unaffected farms. Crucifer seed black leg rules (OAR 603-052-0862) administered by the Oregon Department of Agriculture require that all *Brassica* and other crucifers' seed stock intended for commercial or residential planting in Oregon must be accompanied by an official seed test stating that untreated seed are free from *L. maculans* and *L. biglobosa*.

If infected seeds are planted, early disease symptoms include small, light-green to brown spots on cotyledons (Fig. 1) or black streaks inside the lower stem (Fig. 2A), and both eventually result in the development of a brown decay of the lower stem and upper taproot (Fig. 2B). Brown patches on cotyledons may be mistaken for injury or insect feeding, and infected cotyledons frequently detach prematurely. Seedlings with stem infections typically die and can be confused with damping-off diseases. The black leg fungus produces reproductive structures on infected dead plants or dead plant parts as well as on infected living plants; pycnidia appear as tiny, dark dots and release conidia (asexual spores) which are then moved by water droplets. Pycnidia on dead or living plants can cause the spread of black leg to neighboring plants via water movement. Infected plants that survive past the seedling stage grow more slowly and eventually appear stunted (Fig. 3A). Stem cankers or lesions can be found on the lower stem of stunted, infected plants (Fig. 3B) and examination of the affected lower stem area reveals the presence of pycnidia when black leg is present. Stunted plants due to infected seed should be dug up to examine the base of plants because black leg may be visible only on plant tissues below the soil line. If pycnidia are not found, incubate any suspect plants under moist conditions (place inside a plastic bag or box with lightly moistened paper towels) in the refrigerator for up to two weeks to aid in the formation of pycnidia and conidia. Diagnosis can be made based on the presence of pycnidia and pinkish to purplish masses of conidia released from pycnidia (Fig. 4).

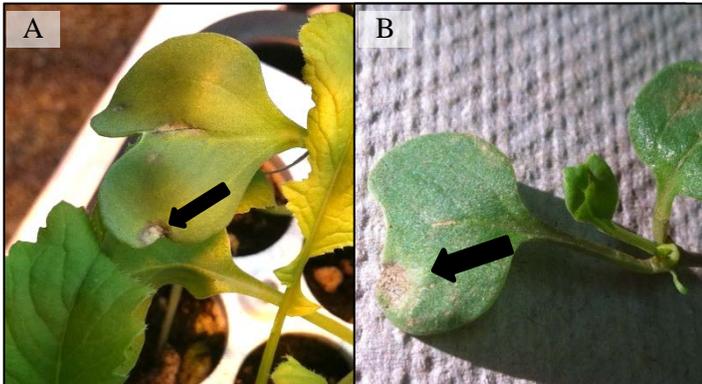


Figure 1. Small, brown spots on the cotyledon of radish (A) and canola (B) due to the fungus that causes black leg.

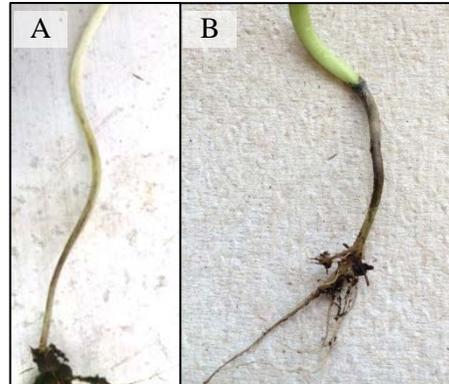


Figure 2. Dark streaks inside stem of mustard greens (A); lower stem and upper taproot of kale with black leg (B).



Figure 3. Arrows indicate stunted broccoli plants due to infected seed (A); stem lesions in close-up of lower portions of stunted broccoli (B).

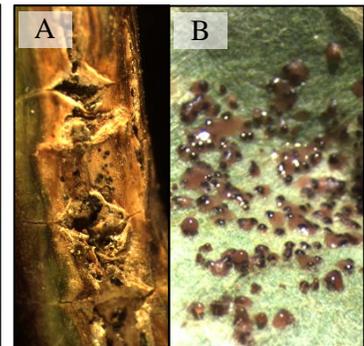


Figure 4. Tiny, dark pycnidia on a stem (A); pinkish spores masses released by pycnidia in a leaf spot (B).