

Black leg, a very important fungal pathogen of crucifers world-wide, has caused widespread disease outbreaks in the western Oregon beginning in 2014, the likes of which have not been seen in the Pacific Northwest for several decades. Black leg co-occurred with light leaf spot, a disease new to North America. The light leaf spot fungus causes serious losses in over-wintering oilseed rape in the UK; how it will impact production in Oregon is not well understood at this time. These two diseases were first observed in the Willamette Valley on oilseed canola and turnip seed fields that were part of the OSU research under Oregon house bill 2427. Further afield surveys by OSU found both diseases in specialty vegetable *Brassica* and radish seed crops as well as cruciferous vegetable crops. Cover-crop crucifers and weedy crucifers can also be host for these two diseases. Both pathogens survive in infected plant residues remaining on the soil surface; their wind-blown spores caused disease this past fall/winter/spring across the Willamette Valley on crucifer seed crops, including turnip (Fig. 1), canola (Fig. 2), kale, cabbage, etc. as well as fresh-market vegetable crops (Fig. 3). Widespread black leg leaf spots occurred by early winter in canola and turnip seed fields (Table 1), and disease has continued to increase, resulting in visible stem cankers this spring on at least a subset of infected plants. There are still a number of weeks until seed harvest, at which time we will better understand the impact of disease this crop cycle, with seed yield data and post-harvest plant sampling. The weather during the fall and winter months, sometimes spring, in western Oregon is typically perfect for black leg and light leaf spot (wet and cool but not freezing). Since many seed markets, including Oregon and Washington, have regulations prohibiting the import or planting of crucifer seeds infected with the black leg pathogen, specialty seed produced in the valley has an increased risk due to the black leg outbreak. Oilseed canola intrinsically has a higher tolerance for disease since seedborne issues are nonexistent for seeds used for crushing, but canola is still at risk due to the severity of black leg on canola in the Willamette Valley. In my professional opinion, all fall-planted crucifer crops in the Willamette Valley are at risk for economic losses, unless wide-spread, intensive disease management efforts are instituted to prevent any further build-up of infected crop residues. All conventional production should institute a protective spray program in fall-planted crucifers to prevent severe disease outbreaks, until infected crop residues levels recede; organic producers need to bury, burn, hot-compost, or otherwise destroy infected plant material. Canola is inherently at risk for less (disease) management inputs as the profit margins are leaner, relative to specialty vegetable seed crops such as cabbage, table kale, etc. Several protective fungicide applications in canola production will be necessary to prevent black leg outbreaks in canola over the next few years, unlike disease management practiced in 2014-15 fields; however, disease levels and management in canola parallel those occurring in many 2014-15 cover crop turnip seed fields located in the valley. Although we have some understanding about the recent crucifer disease outbreaks, many factors remain unknown, including the relative contribution of the various crucifer crop types to overall disease levels in the valley. A black leg management program requirement for canola plantings in the Willamette Valley would decrease plant disease issues among oilseed and vegetable seed growers, and ensure some level of protection for specialty crucifer seed production that the Willamette Valley is so uniquely suited for, as the fungal spores blow further than the current isolation requirements. However, it would be unfair to not have similar requirements for related crops like cover-crop turnip seed fields.

Table. 1 Early winter occurrence of black leg in the Willamette Valley (Dec. '14 to Jan. '15)

Crucifer Type	# infected sites and # surveyed	% plants with black leg	% affected leaf area with black leg leaf spots
oilseed canola	6/6	80-100	10-20
cover-crop turnip & forage rape	6/7	1-70	1-5
vegetable crucifers for seed	3/7	5-40	1-5
volunteer canola & turnip	4/5	1-40	1-10

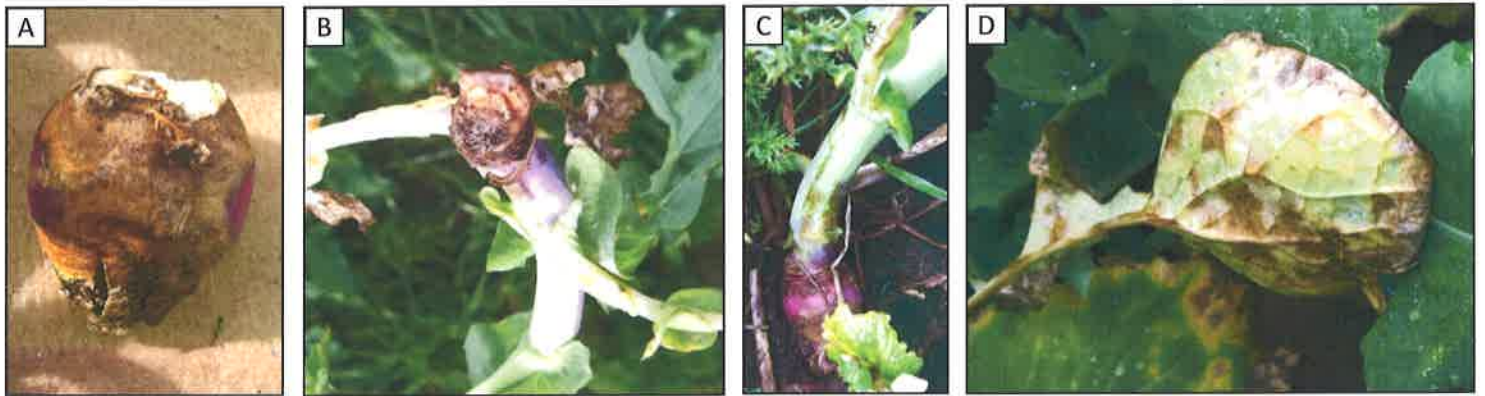


Fig 1. Turnip with black leg (A, B) & light leaf spot (C, D) from seed fields growing in western Oregon, 2015.



Fig 2. Canola with black leg in December 2014 (A, B) and April 2015 (C, D) growing in commercial fields that part of the OSU canola research in the Willamette Valley.

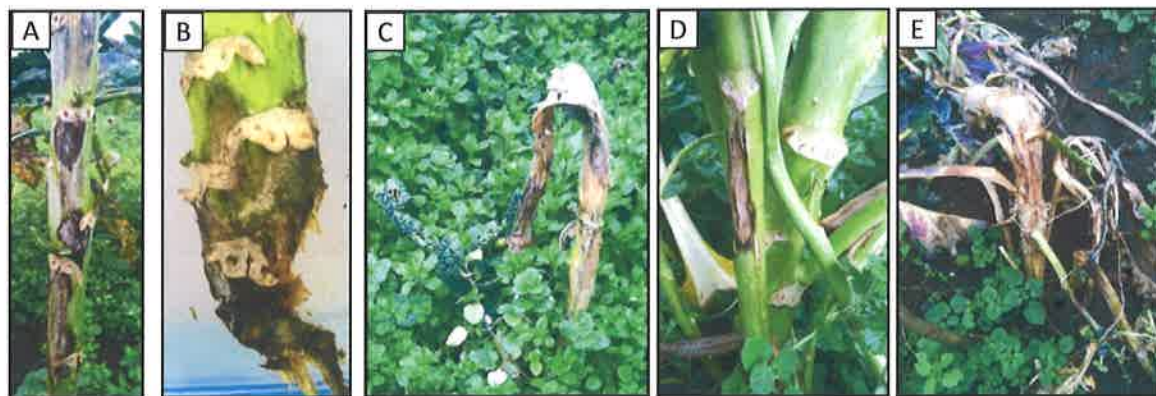


Fig 3. Black leg on fresh market kale (A, B, C) and broccoli (D, E) from organic, fresh-market fields in the Willamette Valley, 2015.