

20/20 Tech Bulletin

What is Bacterial Leaf Streak ?

What to Know About Bacterial Leaf Streak (BLS)

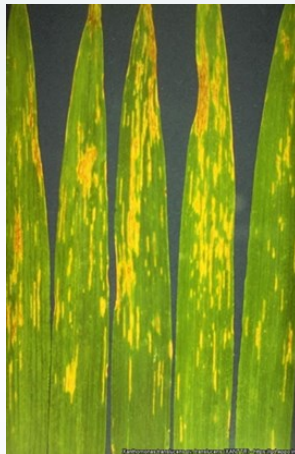
Bacterial Leaf Streak (BLS) was recently noted as a seed-borne disease emerging as a concern in Canada, affecting cereal crops and especially in irrigated areas.

On leaves, symptoms appear as small water-soaked lesions running parallel to the leaf veins. If humidity is high, you might also see a “bacterial ooze” on the lesions, which appear as little yellow milky droplets visible to the naked eye.



Early symptoms on leaves

- Yellow exudates of bacteria on surface of infected leaves
- Seen under favourable temperature and humidity.*



Late symptoms on leaves

- Water-soaked, necrotic streaks
- Initially confined to veins, at edges or mid-rib of leaves, lesions extend longitudinally, turn translucent, and coalesce as the disease progresses.*



Photo credit EPPO Global Database (<https://gd.eppo.int/taxon/XANTTR/photos->)

Symptoms on head

- Dark, longitudinal streaks on glumes
 - Dark banding on awns
- May observe reduced yield due to poor head filling and lower kernel weight.*

On heads, symptoms appear as dark longitudinal streaks on glumes and awned varieties may show dark banding.

Accurate visual identification of bacterial disease is difficult as it does not occur in isolation and will be seen with other pathogens, like tan spot.

Xanthomonas translucens has been identified as the pathogen responsible for BLS and Black Chaff diseases of small cereal grains, by infection of leaves and glumes respectively. Pathovars of *X. translucens* are recognized based on their ability to induce disease symptoms on different crop hosts, and wild or cultivated grasses. This is a distinctly different pathogen from *X. vasicola* which is responsible for BLS on corn. Both *Xanthomonas* species like areas with abundant moisture, as do most bacteria. There are no effective products – seed treatment or foliar - against BLS so prevention is important.

20/20 Seed Labs Inc. is working to develop an informative DNA-based test for specific detection of *X. translucens* pathovars that cause BLS in wheat, barley, rye, and triticale.

A survey of field samples showed that *X.translucens* pathovars affecting small grain cereals are a relatively common occurrence. This is consistent with EPPO pathogen distribution maps that show a known and persistent presence of *X.translucens* pv. *translucens* across Alberta, Saskatchewan, Manitoba, and Quebec.

If a large enough sample is tested, the presence of pathogenic *X.translucens* will be likely. It is unknown, at this time, what level of pathogenic pathovar is significant to disease development and yield loss. The amounts detected vary between samples: from low levels of pathogenic pathovars in mixed populations with non-pathogenic pathovars on seed taken from fields with no known BLS disease, to much higher concentrated pathogenic pathovar presence on samples known to come from BLS-symptomatic fields. The detected levels may change—both up and down-- between seed as planted and its progeny after harvest.

There is no reason for growers to panic though; as with any disease, the best approach is testing and best management practices (BMPs).

According to the University of Nebraska-Lincoln, BMPs to use in this case include:

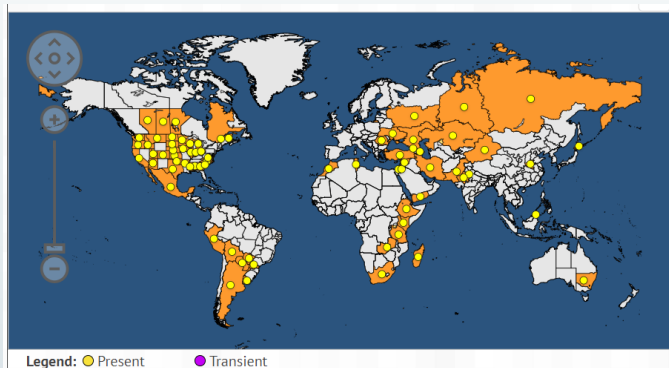
- Sanitation practices such as cleaning debris from combines and other equipment between fields to help slow its spread to unaffected fields.
- In some cropping systems, the use of crop rotation or tillage may help degrade infected debris and reduce the surviving bacteria.

Neither practice will eradicate the bacterium or eliminate the risk of disease. We recommend:

- Testing for BLS if there's a concern in your area.
- Extend crop rotations if possible to keep those cereal hosts away from any stubble that may carry the infection.
- Viability of *Xanthomonas* on seed has also been reported to decrease by 79% after 6 months in storage so using an older seed lot may also be helpful.
- Scout and be prepared to reduce water levels if symptoms occur. Keep good records of fields that show significant symptoms. Avoid planting a cereal crop in those fields for a couple years too.
- Avoid using the seed harvested from infected fields in other high risk fields.

Be aware that BLS is a much bigger issue for durum and irrigated fields. When growing durum under irrigation be extra cautious and follow the BMP's.

For more information contact us at support@2020seedlabs.ca, we can support you with testing and field inspections.



EPPO Global Database Distribution Map *X.translucens* pv. *translucens* (<https://gd.eppo.int/taxon/XANTTR/distribution>)



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