

2019 Late bunch stem necrosis status and survey

Kentville Research and Development Centre (KRDC)

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Late bunch stem necrosis (LBSN) is a complex physiological disorder found in grapevines. Symptoms of this disorder typically become apparent shortly after veraison when the cluster's stem, or rachis, becomes necrotic and decays. As the disorder progresses, the flow of water and photosynthates is cut off and the berries lose turgor pressure and cease to ripen further (Figure 1). The disorder often renders symptomatic clusters unusable. LBSN is found in many parts of the world and has been observed in several different cultivars including popular vinifera such as 'Riesling' and 'Cabernet Sauvignon'. Here in Nova Scotia the disorder has been observed in many cultivars, including 'Marechal Foch', 'Marquette' and 'La Crescent', to name a few. Outbreaks of this disorder can be minor, with only the odd cluster here or there, to severe, with 50% of clusters exhibiting the disorder in some vineyards and up to 80 to 90% in particularly bad pockets within a vineyard.



Figure 1. An image showing two 'Marquette' clusters. The cluster on the left experienced high fruit abortion, but has a healthy green rachis. The cluster on the right is a fuller cluster, but the rachis became necrotic in the previous weeks. These fruit can no longer receive water or photosynthates and have lost turgor pressure.

The cause of this disorder is varied and poorly understood. While nutrient imbalances, in particular elevated potassium and low magnesium levels or low or even elevated nitrogen levels, are often implicated as the cause of LBSN, we know that other factors also play a role



and the cause is rarely so straightforward. For example, while studying the disorder in 'Marquette' grapes in Nova Scotia, we did observe elevated potassium levels and lower magnesium levels in portions of a vineyard with high LBSN compared with other regions of the same vineyard exhibiting no symptoms in 2017. However, in a vineyard of the same cultivar with no history of the disorder, only a few kilometres down the road, an even greater imbalance in the same two nutrients was found in the same year. Other factors that have been linked to this disorder include cool temperatures early in the season leading up to full bloom, cool and wet temperatures around veraison, poor soil drainage, crop load and the pace of ripening. One interesting observation is sites prone to the disorder often exhibit aerial roots (Figure 2), a phenomenon sometimes associated with environmental stress, such as winter damage. LBSN is not thought to be linked to any known diseases or pathogens.

Figure 2. An image showing aerial roots protruding from a node located on a cordon.



Researchers at the KRDC are currently focusing on the 'Marquette' cultivar as we try to better understand this disorder in our region. 2017 was a bad year for LBSN in 'Marquette' for some vineyards, in 2018, there was little evidence of this disorder in those same vineyards. Recent surveys suggest the disorder has returned in 2019. To help us in our research, and whether you have ever observed LBSN in your vineyard or not, we would be grateful if you could send us an email answering the following questions:

1. If you grow 'Marquette', have you ever observed LBSN in your vineyard?
2. If 'yes', do you have it this year?
3. Regardless of whether you have observed LBSN in your 'Marquette' or not, have you ever observed aerial roots on your 'Marquette' vines (generally on the cordon, from a node)?
4. Have you observed commercially-important levels of LBSN in another cultivar? If so, which ones?

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