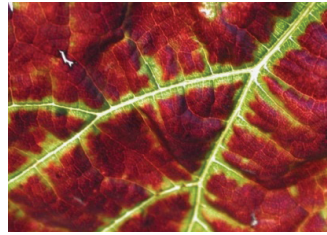




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LEAFROLL CONTROL STRATEGY

2. RECOGNIZING GRAPEVINE LEAFROLL DISEASE SYMPTOMS IN SOUTH AFRICA

2.1 Red-berried cultivars:

Wingerd-rolblaarsiekte word relatief maklik op besmette, algemeen aangeplante rooi druif kultivars (Cabernet Sauvignon, Merlot, Shiraz, Pinotage, Cabernet franc) vanaf deurslaan na die einde van die groeiseisoen waargeneem.

Die simptome word al hoe meer uitgedruk soos die groeiseisoen tot 'n einde kom (April-Mei).

Simptome is geneig om op die oudste blare aan die onderkant van die loot te begin en gedurende die seisoen opwaarts te beweeg (Fig. 1).



Figure 1: Start of leafroll symptoms on basal, oldest leaves. (Image: G. Pietersen, ARC-PPRI)

The earliest signs of leafroll infection are red areas with indistinct borders that form on leaf tissue in between the veins (Fig.2). Recently infected grapevines will only show these symptoms. Note too that the red patches tend to differ in the intensity of red coloration (they do not have an even red coloring) (Fig. 3).



Figure 2: First signs of leafroll disease on a red-berried cultivar. (Image: G. Pietersen, ARC-PPRI)

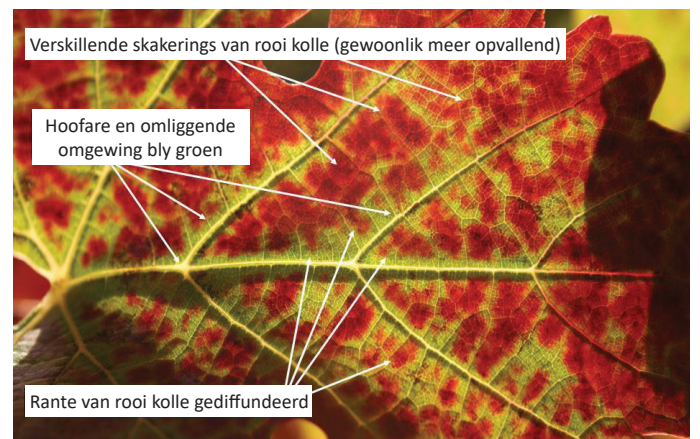


Figure 3: Close up of leafroll symptoms showing red patches between green main veins. (Image: G. Pietersen, ARC-PPRI)

The red areas on the leaf gradually increase in size until they fill the leaf lamina area, leaving a green area bordering the main leaf veins (Fig. 4). The leaf veins tend to remain green and very late in the season turn yellow (Fig. 5).

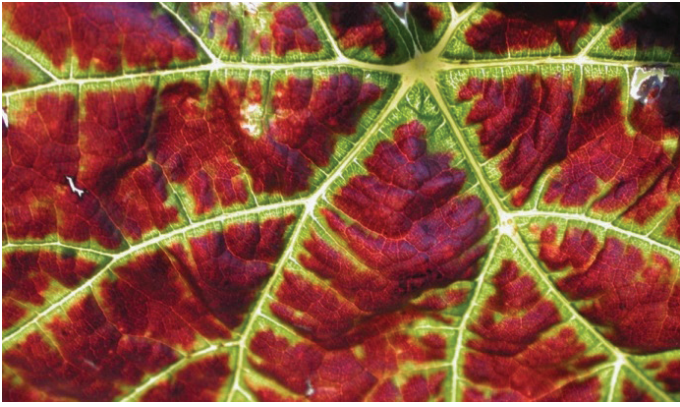


Figure 4: Leafroll with main leaf veins remaining green. (Image: G. Pietersen, ARC-PPRI)

Other cultivars (Cabernet sauvignon, Shiraz, Pinotage) develop the red coloration but do not develop a leaf edge curling symptom (Fig. 7).

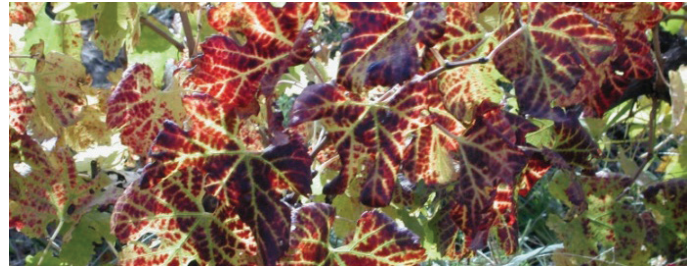


Figure 7: Grapevine leafroll symptoms on Pinotage. (Image: G. Pietersen, ARC-PPRI)



Figure 5: Leafroll with mid-rib and major veins becoming yellow later in the season. (Image: G. Pietersen, ARC-PPRI)

Monitoring of symptoms is best left until as late in the season prior to leaf fall, even though leafroll infected grapevines retain their leaves a bit longer than uninfected grapevines (Fig. 8).



Figure 8: Slight delay in leaf fall of leafroll infected grapevines. (Image: G. Pietersen, ARC-PPRI)

In some cultivars (Pinot noir, Cabernet franc and to some extent on Merlot) the leaf edges begin to curl downwards (hence the name "leafroll"). This may become quite pronounced (Fig. 6).



Onset and severity of symptoms can differ from season to season, based on the level of other stress factors on the grapevine.

Very early after the infection of grapevine leafroll-associated virus3 (GLRaV-3), the cause of leafroll in South Africa, grapevines will not show any symptoms. This is known as the latent period (time since infection until it shows symptoms).

It is not known exactly how long the latent period of the disease is, but this is likely to differ depending on the age of the grapevine when infected, whether the grapevine was infected via mealybugs or infected scion material or infected rootstock material, and various environmental conditions. However it is likely to be at least one season.

This research was funded by



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