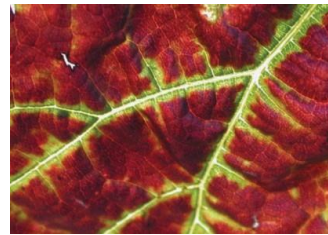
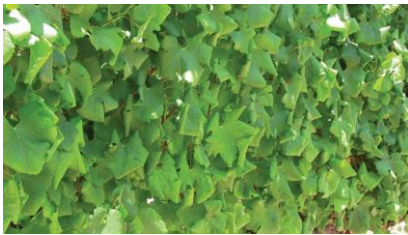




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LEAFROLL CONTROL STRATEGY

9. CATEGORIZATION OF VINEYARDS FOR LEAFROLL CONTROL STRATEGIES.

The success of controlling the spread of leafroll within established vineyards is dependent on removing infected grapevines, controlling mealybug and preventing infections of leafroll from outside the vineyard from occurring.

If too many grapevines are infected and need to be removed, roguing is no longer an economically viable control strategy. To gain some estimate of the chances of success in control of leafroll, the following guidelines are recommended. Threshold values are approximations based on past experience in South Africa on the success of roguing, mealybug control and sanitation to control leafroll, but will be affected by many factors and cannot be considered hard and fast thresholds.

9.1 Red-berried cultivar vineyards

More than 20 % infected

In this category of vineyard, a large amount of secondary spread (from one infected plant to others in the same vineyard) has generally already taken place. Hence a large number of grapevines are infected without showing symptoms yet. If applying roguing of infected plants, the cumulative number of plants to be rogued to reach low numbers of infections will be much more than those showing symptoms initially and therefore is not a feasible strategy.

The producer is faced with a dilemma here as, besides the leafroll infection in the vineyard itself, it serves as a source of virus-carrying mealybugs capable of spreading to and infecting surrounding vineyards.

If the vineyard has low yields, makes poor wine or is close to several uninfected vineyards, it should be completely removed and replanted with healthy grapevines.

If such a vineyard is still productive, profitable, makes

good quality wine, or is distant to uninfected vineyards, a decision may be made to keep it. In this case, it is critical that it be subjected to stringent mealybug control measures for the remainder of its productive life. It should however be removed in total as soon as it shows a decline in productivity or quality of wines.

Between 10 % and 20 % infection

In vineyards with infection between 10 % and 20 % the spatial pattern of leafroll infections must be determined and the pattern assessed in relation to the age of the vineyard. This is to gain an estimate of the potential latent (not showing symptoms yet) leafroll infections present in the vineyards, as this will determine the cumulative number of grapevines which will have to be rogued to reduce the disease to specific levels.

- 1) In vineyards with leafroll infection between 10 % and 20 % infection and with significant clear secondary spread (clumps or foci of infections, or runs of infected grapevines next to each other in rows) (Fig. 1), often more than double the number of grapevines observed will have to be removed to get the disease to below 1 % incidences. If this proves to be too many grapevines to remove and still continue with a productive vineyard, it may be retained until its productivity or quality of wines declines. However the risk of it serving as a source of virus-carrying mealybugs to surrounding vineyards must also be taken in consideration and if retained, stringent mealybug control must be maintained in it for the duration of its lifetime. If retained, annual roguing of infected grapevines and initially also some not showing symptoms around infection foci (especially the grapevines adjacent to infected ones along the row) is recommended. At the same time mealybug control must be conducted.



Figure 1: "Runs" of two or three adjacent leafroll infected grapevines, indicative of infection from a single infected vine to adjacent plants in the row (Image: G. Pietersen, ARC-PPRI).

- 2) In vineyards with leafroll infection between 10 % and 20 % where there is little evidence of secondary spread (few clumps, foci or runs), it is likely that very little secondary spread has occurred and that not too many latently infected grapevines are present. In this scenario it makes sense to annually rogue all infected grapevines. At the same time control of mealybugs in these vineyards should be conducted.

Less than 10 % infected

In vineyards with less than 10 % infection (especially young vineyards), it is recommended that roguing of infected grapevines be done annually. A level of infection of less than 1 % should be attainable within three to five years. During the period that roguing takes place mealybugs must be controlled in these vineyards.

NB! In vineyards where annual roguing is performed and the number of infected grapevines year-on-year is not dropping by at least 50 %, ensure that mealybug control is in fact adequate, or that infection is not taking place from an external source.

9.2 White-berried cultivar vineyards

Leafroll cannot be detected visually in the vast majority of white-berried cultivars and in those in which it is detected (Chardonnay, Semillon, Cape Riesling), it has a long latent phase (virus has infected the plant but it is not showing symptoms yet). Hence it is not possible to control leafroll spread by visual inspection and roguing of infected grapevines timeously.

In these vineyards mealybug control must be conducted to prevent leafroll spread within these vineyards and to neighboring vineyards, which may be red-berried cultivars.

Winetech is currently funding research to find sensitive, practical means of detecting leafroll in white-berried cultivars to support an integrated control strategy, including roguing.

For extremely valuable white-berried cultivar vineyards or where they present a risk to a large number of healthy vineyards, roguing may be performed as for the red-berried cultivars, but using tests to identify infected grapevines.

9.3 Rootstocks vineyards

Leafroll infection cannot be visually detected in the rootstocks commonly used in South Africa and in fact, is also difficult to detect by laboratory tests. Hence it is not possible to control leafroll spread by roguing infected rootstock vines timeously.

In these vineyards, mealybug control must be conducted to prevent leafroll spread, both within these vineyards and to neighboring vineyards.

Winetech is currently funding research to find sensitive, practical means of detecting leafroll in rootstocks to support an integrated control strategy, including roguing.

This research was funded by



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