

Other topics in this Viti-Notes series include:
Monitoring for rust mite
Spring control of rust mite
Restricted Spring Growth

Characteristics of rust mite

Grapevine rust mite is found in most grape growing areas but is often not a problem unless the overuse of chemicals affects populations of predatory mites and insects. It causes damage to leaves and bunch stems. They can be spread by wind, carried on insects and birds or on vine trimmings moved about the vineyard, and inside buds on vine cuttings used for propagation. Naturally occurring beneficial insects and other predatory mite species often keep these pest mites under control with no need for chemical intervention, however if controls are required, for chemicals to be effective, application must be timed to target mites when they are exposed on the vines.

Life cycle

Rust mites are around 0.2mm long and can only just be seen with a X10 hand lens. They have two pairs of legs at the head end which is slightly thicker than the tail end. The adults are brownish in colour and wedge-shaped; juveniles are paler. Rust mite are very similar to bud mite in appearance.

During most of the growing season, adult rust mites, larvae and eggs are found clustered along the main veins on both surfaces of grapevine leaves. Rust mites graze on the surface cells of leaves. Very infrequently, small numbers can also be found in buds at certain stages of the season. If large numbers of pale coloured mites are observed inside buds they are likely to be bud mite rather than rust mite. Adults move from leaves in the late summer/autumn to overwinter under the bark of cordons and the trunk near the vine crowns, and only occasionally under the outer scales of dormant buds. In spring, these adult mites migrate from their winter shelters to the newly swelling buds, where they feed near the base of shoots and begin laying

their eggs. After budburst, rust mites move onto the shelter of new leaves to feed, moving up with the shoot as it grows.

Rust mite populations develop slowly in cool spring weather, with temperatures between 22-25°C and 40-60% relative humidity being optimal. Larvae can develop into adults in 6 days when temperatures are high. Adults have a life expectancy of about one month.

Symptoms

Early spring symptoms of rust mite damage include:

- leaf distortion or crinkling
- shortening of growing shoots (this is most obvious soon after bud burst to the stage where 5-8 leaves have separated)
- small yellowish or clear spots (< 1 mm) on crinkled leaves.

Damaged shoots and leaves progressively recover, however signs of severe early spring damage can be detected in mature leaves throughout the growing season. Leaf crinkling is also visible in young leaves at the tips of shoots throughout the growing season if rust mite infestation continues.

Symptoms of rust mite damage seen in spring may often have been misdiagnosed as restricted spring growth syndrome (RSG), generally thought to be caused by a range of factors including winter chilling injury, waterlogging, overcropping of young vines or grapevine yellows. In summer and early autumn, feeding damage on mature leaves appears as a 'bronzing' effect on leaf surfaces as tiny necrotic spots dry out in the heat.

Economic damage

Rust mite feeding activities cause damage to leaves and bunch stems. There is some indication that Cabernet Sauvignon is more susceptible to feeding damage by rust mites than Chardonnay. Late budburst varieties such as Cabernet Sauvignon and Sauvignon Blanc, tend to grow slower in the cooler temperatures of early spring so that relative to varieties which have faster growth rates at cooler temperatures, such as Chardonnay, the leaf area to mite ratio is lower. This allows higher levels of rust mite feeding damage to occur over a more restricted area, and thus greater total damage levels. This 'leaf expansion rate compared to mite feeding rate' effect may impact to a greater extent on all varieties in cooler springs when overall vine growth rates will be slower. Growth rates in later bud-bursting varieties may be affected by severe rust mite feeding damage until fruit set.

Recent research indicates that severe infestations of rust mite can cause a reduction in yield of 10% or more as a result of damage which results in a shorter bunches and thus fewer berries. However it appears that even severe instances of summer leaf bronzing has no effect on the ripening of grapes, though the research indicates that there exists the potential for delayed ripening in late maturing varieties such as Cabernet Sauvignon in cool summers, or cooler regions in wetter seasons - the instance of this is yet to be investigated.

Further information

A useful reference is:

Bernard, M, Horne, PA and Hoffmann, AA (2001) Preventing restricted spring growth, The Australian Grapegrower and Winemaker issues: 452, pp16-7 and 19-22, 453 p26

Also available at www.grapeandwine.com.au/sept01/010907.htm

Numerous articles about rust mite have been published in various issues of The Australian and New Zealand Grapegrower and Winemaker. Visit www.grapeandwine.com.au/ for details.

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- Enquiries to Peter Mansfield at Winetac on (08) 8373 7090 or visit www.crcv.com.au for more information.

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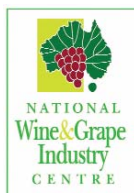
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