

Grapegrowing

Grapegrowing Q&A



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Real Viticulture is a regular column written exclusively for Grapegrower & Winemaker by Ben Rose, principal consultant of Performance Viticulture. This month, Ben responds to common questions about reddening of leaves on young vines, hydraulic performance and grape quality.

The leaves on some of my young vines are curling and turning red. What could be the cause?

Without seeing the vines in question, it is extremely difficult to determine what may have caused this problem. However, red, curling leaves generally indicate a problem that results in a poor flow of nutrients/water around the vine. This in turn may lead to stress, premature leaf reddening and leaf drop. There are a number of things that I would immediately look for and I would mentally go through this check list:

How are the affected vines distributed in the vineyard?

- individually scattered randomly – suspect trunk/root damage
- in small groups – suspect trunk/root damage by insects
- in large groups – suspect soil-related issues
- majority or whole vineyard – suspect vine virus.

Where does the reddening start?

- Only the upper leaves are red

Check the trunk for damage at the point where the leaves become red. Common damage includes strangulation by string (to prevent this (see Real Viticulture, *Grapegrower & Winemaker*, October 2004 p34-36); strangulation by other material such as vine ties, or vine tendrils; a break or other damage to the trunk that may be caused by wind or birds. In most cases if the leaves are red the damage is severe and the quickest recovery option may well be to cut the vine off just below the damage and re-train a lateral shoot.

- All the leaves are red

I would suspect graft problems, below-ground trunk/root damage or a virus.

- Inspect the graft union. If the union is excessively swollen there may be a poor bond between the rootstock and scion (top variety). In this case either cut back the main shoot to relieve the demand for nutrients allowing the union to “heal” (this may take some time for the vine to fully recover) or replace the vine.

- Carefully dig directly around the vine trunk to a depth of 100mm. If there is evidence of bark removal or trunk damage, suspect insect attack on the trunk (such as African Black Beetle) and control appropriately, or mechanical damage from implements (weeding devices such as silly ploughs and hand hoes) and ensure that your staff are well trained in the use of the equipment. ▶

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In both cases if the damage is less than 50% of the diameter of the trunk and a callous is forming, then the vine may recover quickly. You should cut back the main shoot to relieve the demand for nutrients allowing the wound to heal. If the damage is greater than 50% of the diameter or there is no callous, the best option may be to replant the vine.

- Carefully dig up the root system of the vine and look for root growth. If the roots are malformed there may be other soil insects present and a pathological examination may be required (you should send samples to the appropriate service in your region.) If there is no evidence of new root growth, the vine's root system may have been restricted (for example, by being poorly planted, low soil moisture, high soil moisture, poor soil fertility), you will need to assess and rectify the problem.
- None of the above is obvious. Suspect a vine virus and send a sample to the appropriate service in your region for analysis.



Young grapevine showing foliar signs of African Black Beetle Damage (damage below ground).

When I use implements driven by the hydraulic system on my tractor, they run well for a while and then slow down after some time, losing power. I service the tractor myself. What could be the problem?

More and more of the tractor-mounted implements used in best-practice viticulture rely on hydraulic oil flow from the tractor to power the implement, as often the PTO (power take-off) is being used for other tasks. Such implements include spray plants (to drive the fan), wire lifters, trimmers, harvesters and pre-pruners. As more reliance is placed on the hydraulic system, more issues become apparent with existing tractors.

I have experienced this lack of hydraulic power problem and it could be due to three things. First, the hydraulic oil, used to drive the hydraulic motor on

the implement you are using, comes from the tractor (unless you are using a power pack), and is connected via couplings. In dusty environments the couplings will pick up dirt and grit when they are not being used and some of this contamination may be transferred to the oil when the couplings are joined. The oil is filtered by passing through a hydraulic filter and the solid contaminants are picked up in the filter. If this filter has not been changed recently it may be blocked and reducing oil flow. This filter should be changed at regular intervals as per the manufacturer's schedule. If you are using a power pack, the filter will also require changing at regular intervals.

Second, the hydraulic oil may be becoming too hot to operate effectively. All oils are designed to run within a certain heat range. As the oil heats up it becomes less viscous (more fluid) and the properties of the oil change. In hydraulics the power that the oil can deliver to the motor become less and the implement may slow down or fail completely under load, but may operate well with no load. In this case an oil cooler (or additional cooler) should be fitted to the tractor or implement to maintain the oil within the correct temperature range. Fitting the cooler may be enough. However, if the oil has become too hot for too long it may also experience thermal breakdown and if this is the case the oil should be changed (as the lubricating qualities and the effectiveness of oil additives will also be severely reduced).

Third, the hydraulic pump, or the hydraulic motor may be worn, and once the oil warms up and reaches its operating temperature range the pump and motor may not operate effectively. The pump delivery pressure and oil flow can be checked by a good mechanic, and a worn pump/motor easily diagnosed.

As a part of general tractor maintenance the hydraulic system should not be overlooked.

Many people talk about grape and wine quality, and I don't understand what they are referring too. Can you give me your take on this?

Over the past few years the "push for quality" has increased, as the supply of grapes to wineries has increased. Unfortunately the terms quality, style and

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