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Aspergillus Vine Canker – A Recent Discovery

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Aspergillus niger can infect vigorous shoots that are being trained up the stake to form the trunk and cordons of a new vine. The fungus becomes established in the vascular tissue of the shoot by entering through a wound. A canker then develops that is 4 to 12 inches long and can sometimes girdle the shoot. Dr. Themis Michailides, UC plant pathologist at the Kearney Ag Center, proved (Koch's postulates) that *Aspergillus niger* was causing the canker and the disease has been named Aspergillus Vine Canker. *Aspergillus niger* attacks many fruits and vegetables. It can grow on dead plant and animal tissues (saprophyte) and is a common inhabitant of soil. Spores (conidia) are very common in air and soil. Aspergillus Vine Canker is the result of parasitic activity, and this is quite unusual for this fungus which is normally saprophytic.

Aspergillus Vine Canker was first noted in the San Joaquin Valley in the fall of 1989 on exceptionally vigorous Red Globe vines that had been trained up the stake that year. Since 1989, Aspergillus Canker has been observed in Tulare, Kern, and Fresno counties on Red Globe, Crimson Seedless, Chardonnay, and Grenache vines. In every case, it occurred the year the vines were trained up the stake and the vines were exceptionally vigorous.

Aspergillus Vine Canker has not resulted in serious setbacks in the establishment of these vineyards or economic consequences to the grower, but it has resulted in the retraining of 2% to 5% of vines the following spring using a shoot originating from below the canker.

Aspergillus niger thrives in warm weather (83 to 93 ^{o} F) and infections most likely occur from late April to July. A wound is needed for the fungus to become established in shoot tissue and moisture provided by the shoot's sap promotes and stimulates growth. About 60% of the cankers were found at the crotch of the vine and these infection occurred when the shoot was topped to form cordons (see Photograph). The remaining infections were found along the shoot predominately at nodes but also at internodal sites, and these infections entered through wounds caused by removing laterals or leaves or possibly through growth cracks that occur on very rapidly growing shoots.

The first indication of Aspergillus Vine Canker occurs in August when red, sap balls (size of a pinheads) can be found near the site of initial infection. Cutting into the shoot where sap balls are present reveals discolored tissue. The canker is very obvious by the fall. In October and November, the canopies of vines that have been girdled by the canker prematurely display fall colors and are easily distinguished from healthy vines. A closer examination of these vines reveals a canker on the young trunk that is very apparent. The trunk is slightly larger where the

canker occurs, appears puffy, and may feel spongy compared to healthy tissue. Using a knife to cut into the canker exposes discolored and dead tissue. Black spores are abundant within the canker and sometimes visible on the surface of the canker. Callous tissue is often associated with the canker as the vine attempts to repair the damage with new tissue.

Aspergillus Vine Canker is rather rare. It has been identified in only a handful of cases over the past ten years. In the observed vineyards, about 2 to 5% of the vines had Aspergillus Vine Canker. Cankers were 4 to 12 inches in length and affected anywhere from a small fraction of the shoot's cross sectional area to completely girdling the shoot. Shoots usually healed and grew normally when less than half of the cross sectional area had been killed by the canker. The canker did not continue to grow in subsequent years. Shoots completely girdled by the canker were retrained the following spring.
The application of fungicides to control Aspergillus Vine Canker is not practical because of the rarity of the disease. The best management approach when Aspergillus Vine Canker appears in a young vineyard being trained up the stake is to survey the vineyard in November when affected vines are easily distinguished from healthy ones by their display of fall leaf colors (such as leaf reddening in red varieties). These vines can be cut back below the canker immediately or marked and reevaluated the following spring. Cutting back in the fall assures that all cankers have been removed. However, growers have noted that vines with a small canker will heal and develop into a normal healthy vine. These growers have opted to delay cutting back the vines until spring. In April they revisit vines identified as having a canker and determine whether shoot growth is normal. Vines with normal growth are left alone and those with weak shoot growth are cut back below the canker and the vine is retrained.

Note: Canker in the crotch of this newly trained Crimson Seedless vine.