

GRAPE BERRY PROBLEMS

Water Berry

There are two conditions of interrupted berry development called “water berry.” In one condition the affected berries are largely confined to the tip of the rachis; in the other conditions they may be scattered throughout the cluster:

Water Berry 1

The first condition was described by Bioletti (1923) as a condition where the berries lack normal sugar, color, flavor, and shipping quality. He attributed this condition to overcropping, which prevented proper nourishment and complete development of the affected berries. The most common cause of undernourishment is overcropping. This form of water berry usually occurs at the tips of the clusters and, in more severe cases, in berries at the tips of large laterals of the clusters. In mild cases only a few berries at the tips of the clusters are lower in total soluble solids, higher in acid, and somewhat soft in texture. In severe cases the berries of part of the cluster may become dull in color and watery, shriveling, as the season advances and then drying up entirely. In colored varieties this condition is called red berry, from the retarding of the coloring of the berries. Except for poor color development, the symptoms of red berry are identical with this type of water berry. In some cases this type of water berry has been reduced by potash application.

Water Berry 2

The second condition, in which the affected berries may appear in all parts of the clusters, is not associated with overcropping, nor with lack of potash. In fact, in the southern San Joaquin Valley, where this condition has been most frequent, Kasimatis (1957) found it most prevalent on thoroughly thinned, vigorous vines carrying crops well within their capacity. The evidence incriminates stresses induced within the vines by hot spells while girdling wounds are still open. The stresses seem to result from competition between the fruit and vegetative

parts, especially the leaves, for materials in short supply. Kasimatis showed that this condition was directly associated with plugging of the xylem vessels in the pedicel by tyloses. The extent of tylose development and its influence on the passage of water and other materials seemed to determine the degree of deterioration in berry development. When obstruction is nearly complete, the pedicel may continue to keep the berry alive, but the berry becomes a water berry—in this case, the phloem vessels are also obstructed, and sugar is not moved to the berries.

It is evident that both overly vigorous vines and excessive thinning of such vines should be avoided. When girdling is done on them, the cut should not injure the wood. Further research will be required for more definite directions for control.

Powdery Mildew

Also consider powdery mildew when berries are not developing properly. Powdery mildew fungus can infect all green tissues of the grapevine. It appears as a white or grayish white powdery covering on the upper and lower surfaces of the leaves and fruit. Expanding leaves that are infected become distorted and stunted. When green shoots are infected, the fungus appears dark brown to black and remains as brown patches on surface of dormant canes. Flowers may be attacked and fail to set fruit. Berries that are attacked when small, drop off. Larger berries develop abnormal shapes and often crack open or become badly scarred, or may become hard and fail to ripen. Powdery mildew on the stems of the clusters makes them weak and brittle. It also interferes with the nutrition and ripening of the fruit. Powdery mildew is a major problem on vinifera grapes. It is not common on Concords. When berries of purple or red cultivars are attacked as they begin to ripen, they fail to color properly and have a blotchy appearance at harvest. Susceptible

cultivars are Chardonnay, Chenin blanc, Riesling, Cabernet Sauvignon, Black Monuka and Thompson Seedless.

The first symptoms of powdery mildew are whitish patches of cobweb-like growth on the surface of the foliage and fruit. Later, the patches take on a grayish, powdery appearance. Affected areas of the shoots or canes may darken to reddish brown or black. Severely affected young leaves become distorted and have yellow-brown color. Older leaves will have yellowish spots at the points of fungus infection. In severe infections, the vines will look wilted, and a “mildewy” odor will be easy to detect. High relative humidity is conducive to infection. Infected shoots should be pruned and destroyed. Good winter pruning increases air circulation and reduces the chances of heavy infection.

2, 4-D Injury

Grape flower clusters contaminated with 2, 4-D at full bloom usually develop smaller berries and, with increasing concentrations, may develop some shot-berries. Fruit set may or may not be affected. In severe conditions, pollination and/or fertilization is affected and only a few berries will grow to normal size. Others will remain small or abort (drop off.)

Black Vine Weevil Injury

Adult Black Vine weevils feed on grape clusters during June and July. Damage consists of girdled berry stems or cluster stems. Severely injured clusters have berries that do not size or ripen properly. Weevils are seldom seen since they do most of their damage at night when they are most active. Control for home gardeners can only be achieved by placing barriers such as Teflon tape around the trunk of the vine. No pesticides that will control the Black Vine weevil are registered for home garden use on grapes.

Stink Bug Injury

Stink bugs will occasionally feed on young grape clusters. The resulting injury is withered berries. Only berries that have been “stung” are affected giving clusters a checkerboard appearance. Since this injury is rare, control should only be considered when injury is severe and numerous stink bugs are seen.