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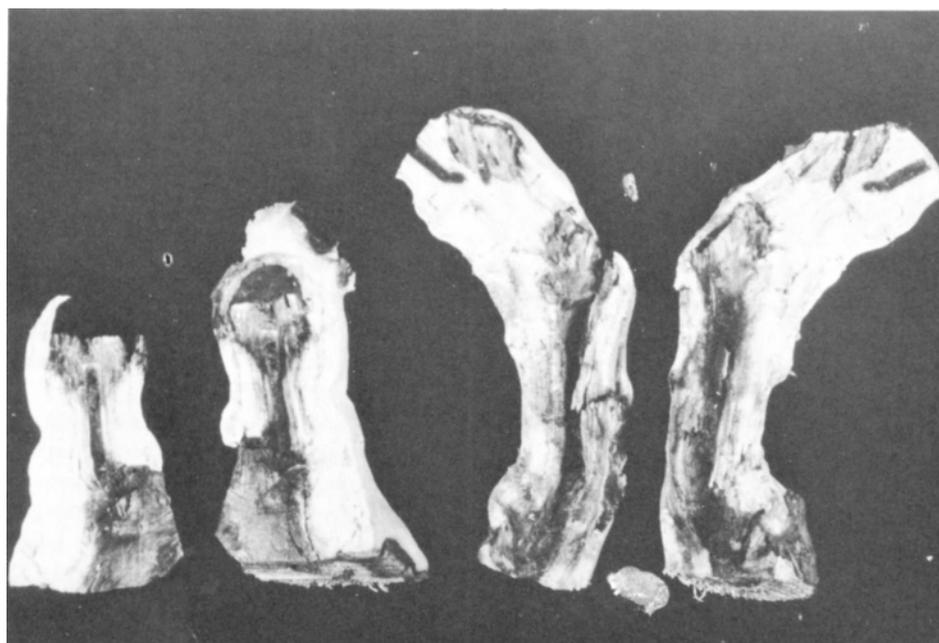


Weak and stunted shoot characterizing dying arm disorder, shown on the right side of a Carignane vine. Photographed in early May.

A DYING ARM DISORDER affecting grapevines has become apparent in California vineyards in recent years. Better knowledge of virus and nutritional disease symptoms has drawn attention to this disorder as a separate problem, which appears to be of increasing importance. Surveys in commercial vineyards in the spring of 1974 revealed a widespread distribution, with incidence ranging from 6% affected vines in a 7-year-old Zinfandel vineyard near Lodi, in San Joaquin County, to 78% in a 15-year-old vineyard of Valdepeñas near Modesto, Stanislaus County. The disease is most prevalent near the San Francisco Bay (the northern San Joaquin, Napa and Livermore valleys) but has been detected as far south as Livingston in Merced County. Other counties where the disorder has been seen include Alameda, Contra Costa, San Benito, Santa Clara, and Solano. Varieties vary in susceptibility but symptoms have been observed in Alicante Bouschet, Cabernet franc, Cabernet Sauvignon, Carignane, Chenin blanc, Folle blanche, French Colombard, Grenache, Gray Riesling, Palomino, Petite Sirah, Pinot blanc, Sauvignon blanc, Sylvaner, Thompson Seedless, Valdepeñas and Zinfandel.

Symptoms

The symptoms are most obvious soon after bud break and just ahead of rapid shoot growth (April-May). Affected vines show individual weak and stunted shoots with reduced leaf size and shortened internodes (see photos). These shoots contrast strikingly with healthy ones alongside. Leaves on the affected shoots show varying degrees of yellowing, speckling, distortion and marginal burning (see photo) but do not wilt. Many of the flowers shell off and most berries on these shoots fail to mature. By midsummer, the dying arms are difficult to see, because they are covered by vigorous



Internal wood symptoms seen in paired pieces removed from Carignane vine several inches below stunted shoots. Note the extensive discoloration in wood tissue extending from old pruning wounds.

recognized **ARM DISEASE** *grapevines*

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A Chenin blanc leaf displaying symptoms of stunting, bronzing, and distortion. Photographed in late May.

growth from adjacent arms, unless a major portion of the vine's structural framework is involved. Spurs retained from diseased canes frequently fail to leaf out during the following spring, by which time the infection may also involve shoots on adjacent arms.

There are further internal symptoms: lengthwise splitting of diseased arms with stunted shoots invariably reveals extensive areas of dead wood tissue (see photo). In advanced cases, cankers (dead areas) associated with old pruning wounds are externally apparent after removal of the rough outer bark, and wood may assume a twisted or flattened appearance. A consistent finding has been that only a narrow strip of live wood exists between dying arms and the healthy vine frame.

Isolations

Apricot dieback, is also a common disease in northern California and the similarity of its symptoms to those of the grape disorder led to intensive examination of affected vines in the spring of 1974. Laboratory cultures of the inner discolored wood of more than 100 dying arms taken from the grape varieties mentioned earlier have resulted in frequent recovery of typical colonies of the apricot dieback fungus (*Eutypa armeniaca* [impf. *Cytosporina*]). Current surveys have also revealed a frequent association of fruiting bodies of this fungus with old, dead grape wood in the high rainfall (20 inches or more) parts of Napa and Solano counties.

Further tests are in progress to determine whether *E. armeniaca* is the causal agent of this newly recognized grapevine disease in California.

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A dying arm disease of grapevine is important on some grape varieties in California. Leaf and shoot symptoms are readily apparent in mid-April, when healthy shoots are 6 to 12 inches long. Initially, single arms are affected, with the infection spreading to the main framework of the vine in succeeding years. Yield declines accordingly. The fungus causing apricot dieback (*Eutypa armeniaca* [impf. *Cytosporina*]) has been consistently isolated from diseased grapevine tissues.



Chenin blanc vine with weak and stunted shoot characterizing dying arm disorder. Photographed in mid-June.