

This news brochure is intended to provide guidelines to recognize and diagnose Grapevine red blotch disease.



For more information, contact:

Dr. Mysore R. Sudarshana
Research Biologist, USDA-ARS,
Department of Plant Pathology,
University of California,
One Shields Av., Davis, CA 95616

United States Department of Agriculture
Agricultural Research Service

Grapevine Red Blotch Disease



**Mysore R. Sudarshana, Research Biologist,
USDA-ARS, Department of Plant Pathology,
James A. Wolpert, Extension Viticulturist,
Department of Viticulture and Enology,
University of California, Davis.**

USDA is an equal opportunity provider and employer
November 2012

Grapevine Red Blotch

Introduction

In 2008, Cabernet Sauvignon grapevines on rootstock 101-14 in research plots at the Oakville Station, (Department of Enology & Viticulture, University of California, Davis), exhibited symptoms resembling leafroll disease. These grapevines produced clusters with reduced sugar content causing delayed harvests. Among the grapevine pests and diseases, only leafroll diseases exhibit similar canopy symptoms and most importantly cause reduced sugar accumulation in the berries. Occasionally, the color development was also poor in some clusters and the clusters also exhibited increased acidity as well. Laboratory tests conducted at private and public grapevine testing services centers failed to detect any of the leafroll and rugose wood viruses in these samples. Commercial vineyards planted with Cabernet Franc and Cabernet Sauvignon in Napa County also exhibited similar disease symptoms as at the Oakville Station.

Thus far, the disease symptoms have been observed in vineyards planted with red grape varieties such as Cabernet Franc, Cabernet Sauvignon, Merlot, Petite Sirah, Petit Verdot and Zinfandel. In addition to North Coast vineyards in Napa and Sonoma Counties, diseased vineyards have also been found in Central Coast (San Luis Obispo County) and San Joaquin Valley (Fresno County).

DISEASE SYMPTOMS: The symptoms generally start appearing in late August through September as irregular blotches on leaf blades on basal portions of shoots. The secondary and tertiary veins turn partly or fully red. Occasionally, the reddening of leaf blade in the interveinal zones between secondary veins resembles those of leafroll diseases, but the leaf margins do not roll downward. Also, in leaf-roll affected red varieties the secondary and tertiary veins remain green. It is not known if the disease has any effect on fruit yield, and cause vine decline. The most significant impact of the disease appears to be on the Brix units of the berries. Brix of grapes in vines showing red blotch symptoms has been found to be 4 to 5 units lower than those with green canopies and this difference is higher than those normally seen in leafroll-affected grapevines.



Red blotch and red veins on a leaf of Cabernet Franc grapevine.

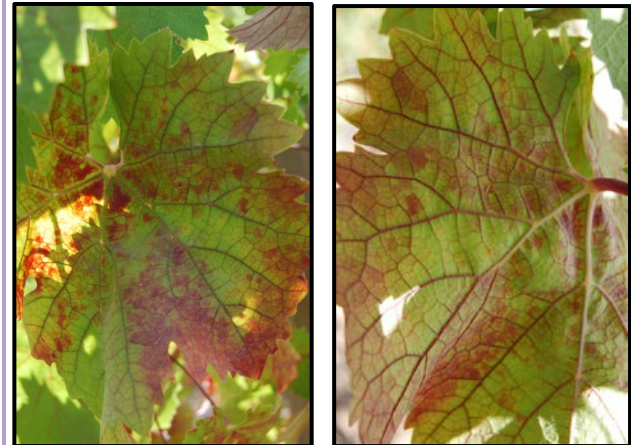
ETIOLOGY: The disease symptoms do not appear to be caused by nutritional deficiencies nor by stress, nor by bacteria, fungi and/or nematodes. A unique DNA virus was found



Cabernet Franc grapevines showing red blotch disease (top left and bottom) and harvested normal grapevine (top right), October 2012.

associated with diseased grapevines from vineyards planted with Cabernet Franc, Cabernet Sauvignon and Zinfandel and this new virus has been proposed to be called as ‘Grapevine red blotch-associated virus’ (GRBaV). In PCR assays, this new virus has been found consistently associated with symptomatic grapevines. A virus originally called- Grapevine cabernet franc-associated virus, similar to GRBaV, has been found in vineyards in New York and Pennsylvania by researchers at Cornell University. Also, a genetically identical virus has been found in grapevines in Canada.

DIAGNOSIS: Grapevine red blotch does not appear to be of recent origin. This disease escaped attention of vineyard owners and managers because of leafroll-like symptoms. This also means that diagnosis based on the leaf symptoms can be challenging. A molecular assay, DNA-based PCR, is currently available and the virus can be detected in the petioles of basal leaves, much before the onset of symptoms, and also in dormant canes. Several private laboratories have started providing diagnosis services to detect the virus by molecular assays.



The upper and lower sides of a leaf showing red blotch (left) and red secondary and tertiary veins (right), respectively..

WHAT CAN VINEYARD OWNERS DO?

If grapevines, red or white, are producing fruit with Brix values lower than expected and are not showing classic leafroll-like symptoms, please contact your local Viticulture Farm Advisor. The list of farm advisors can be found at

<http://wineserver.ucdavis.edu/people/agtech.php>