WERA-20 report for 2008

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Studies were continued to document the occurrence of grapevine viruses in Washington State vineyards. Using molecular diagnostic techniques, *Grapevine leafroll-associated virus* (GLRaV)-1, -2, -3, -4, -5, and -9, *Grapevine Virus A*, *Grapevine Virus B*, *Grapevine rupestris stem pitting-associated virus* (GRSPaV), and Grapevine fanleaf virus (GFLV) have been detected in several red- and white-berried wine grape cultivars. These viruses have been shown to occur as either single or mixed infections in individual grapevines. GLRaV-3 was found to be the most prevalent among the viruses documented. Molecular studies have confirmed for the first time the occurrence of Red Globe strain of GLRaV-2, GLRaV-9 and GFLV in several wine grape cultivars. Sequence analysis of two different regions of the genomes of GRSPaV and GLRaV-2 isolates collected from different vineyards provided evidence for the presence of molecular variants of GRSPaV and GRLaV-2 in Washington and Oregon State vineyards.

The spatial pattern of GLD distribution was monitored for the past three seasons in several geographically widely separated vineyards. The results showed clustering of GLD-infected grapevines along individual rows, suggesting that GLD spreads between neighboring grapevines within rows. These patterns of spatial distribution were observed in two different cultivars indicating that the pattern of GLD spread could be similar in different cultivars.

Impact statement:

The research outputs have provided science-based knowledge for an improved understanding of the epidemiology of grapevine leafroll disease. The prevalence of different viruses as single and mixed infections in individual grapevines highlights the importance of testing for different viruses in virus indexing programs. Information on genetic diversity of viruses is helpful in the development of diagnostic methods that would detect all the strains of a virus in certification and 'clean' planting programs.

Publications:

Jarugula, S., Soule, M.J., Rowhani, A. and **Naidu, R.A**. 2008. First report of *Grapevine leafroll-associated virus-9* in Washington State vineyards. Plant Disease 92: 485.

Mekuria, T., Martin, R.R. and **Naidu, R. A**. 2008. First report of the occurrence of *Grapevine fanleaf virus* in Washington State vineyards. Plant Disease 92: 1250.