Project Report

American Vineyard Foundation, California Rootstock Commission, the UC-DANR Competitive Grant Program in Viticulture and Enology, and the Viticulture Consortium

April 1, 2000-March 31, 2001

Project Title: Virus Effects on Fruit and Wine Quality of Cabernet Sauvignon on Six Rootstocks

Principal Investigators:

Deborah A. Golino
Department of Plant Pathology
One Shields Ave.
University of California
Davis, California 95616
☎: 530-754-8102
fax: 530-752-2132
email: dagolino@ucdavis.edu

James Wolpert
Department of Viticulture and Enology
One Shields Ave.
University of California
Davis, California 95616
☎: 530-752-0381
fax: 530-752-0382
email: jawolpert@ucdavis.edu

Objectives and Experiments Conducted to Accomplish Objectives:

The primary objective of this work is to evaluate the effects of grapevine leafroll virus (GLRV), corky bark associated virus (= grapevine virus B (GVB)), and Rupestris stem pitting virus (RSPaV), in single and mixed infections, on the fruit and wine quality of Cabernet Sauvignon grafted on selected rootstocks.

In the first year of this grant, budwood and rootstock was collected, PCR-tested, and benchgrafting is planned for April, 2001. Budwood of Cabernet Sauvignon - 05 was collected from the Davis Grapevine Virus Collection and Foundation Plant Materials Service. The virus collection was made by chipbudding virus-infected buds from diverse sources into plants of Cabernet Sauvignon - 05 on St. George, then removing the inoculum bud, resulting in a unique collection of different viruses in same clone of Cabernet. It thereby emphasizes variability due to virus differences and eliminates variability due to clonal differences.

Budwood mother plants were PCR tested for the following 13 viruses: grapevine leafroll viruses (GLRV) -1, -2, -3, -4, and -5, grapevine virus A (GVA), grapevine virus B (GVB), grapevine virus C (GVC), grapevine virus D (GVD), grapevine fleck virus (GFkV), grapevine fanleaf virus (GFLV), Rupestris stem pitting (RSP), and tomato ringspot virus (TmRSV).

Virus treatments to be grafted include: LR101, a single infection of GLRV-3; LR109, a multiple infection of GLRV-2, -3, GVC, and GFkV; RSP115 , CB100, a multiple infection of GVB and GLRV-2; LR102, a multiple infection of GLRV-1, -2, and GVB; and Healthy.

Cuttings of the following six rootstocks were collected, callused and potted: Corderc 3309, Kober 5BB, Paulsen 1103, Richter 110, Millardet et de Grasset 101-14, and Rupestris St. George. These were selected as representative of commercial rootstocks for the region with the exception of Rupestris St. George which was selected for its known virus tolerance.

Bench grafts will be made for each combination of virus and rootstock, in spring, 2001. They will then be tested by PCR to insure that infection has been established, and planted at the UC Oakville Experimental Vineyard in Napa Valley, California.

Summary of Research (Major Accomplishments and Results) by Objective:

This has been the first year of the vineyard establishment phase of the project. Budwood and rootstock cuttings were collected, and PCR-tested; rootstock cuttings were rooted. All PCR tests were negative for the healthy control budwood. Benchgrafts will be made of each virus and rootstock combination in spring 2001 and the vineyard will be established in summer, 2001.

No results are expected until vines mature and begin to bear fruit. The earliest data could be taken from this block would be in 2004.

Publications or Reports: none at this time

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Concise General Summary of Current Years Results:

This has been the first year of the vineyard establishment phase of the project. Budwood and rootstock was collected, PCR-tested, and benchgrafting is planned for April, 2001. Budwood of virus-infected and healthy Cabernet Sauvignon - 05 was collected from the Davis Grapevine Virus Collection and Foundation Plant Materials Service. Budwood mother plants were PCR tested for 13 viruses. Cuttings of the following six rootstocks were collected and rooted: Corderc 3309, Kober 5BB, Paulsen 1103, Richter 110, Millardet et de Grasset 101-14, and Rupestris St. George. In summer, 2001, the vineyard will be established at the UC Oakville Experimental Vineyard in Napa Valley, California. Initial yield and fruit data is first expected about 2004.