

Title: Maintenance of Fruiting Potential Through the Winter Period for Cold-Tender Varieties Grown in Michigan Vineyards

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Objectives:

- (1) To develop cost efficient procedures for hilling-up and taking-out soil around grafted vines in Michigan vineyards.
- (2) To evaluate procedures for burying and uncovering fruit buds of very cold-tender, commercially important wine grape cultivars in Michigan.
- (3) To evaluate the long-term influence of hilling-up and taking-out on cold-tender grapevines grown in Michigan.

Results:

(1) Cost Efficient Procedures for Hilling-up and Taking-out soil around grafted grapevines - Field trials of equipment to perform a 100% mechanical hilling-up and take-out of soil around grafted grapevines were successfully concluded in 2002. The publication entitled "The Construction of Equipment for Hilling-up and Taking-out Around Grafted Grapevines" was published as SWMREC Special Report #23 and is available on the website at: <http://www.msue.msu.edu/swmrec>.

(2) Evaluation of Procedures for Protecting Fruit Buds of Cold- Tender Grape Varieties From Low Winter Temperatures - Previous work had verified the ability to protect the buds of the cold tender variety Merlot from low winter temperatures utilizing the insulating properties of soil or straw/hay. Current efforts have focused on utilizing straw/haw on a commercial scale (Fig. 1). Vines of the Merlot variety were managed so that two canes per vine were placed on the ground in the fall and then either left uncovered or covered with two quantities of straw. Winter low temperatures in 2001-2002 were 2°, 2°, 10°, 17°, or 19° F at 60" above ground, 12" above ground, ground level (GL), ground level under 1x straw mulch (GL-1xSM), and ground level under 2x straw mulch (GL-2xSM), respectively. Late spring evaluation of live nodes revealed significantly greater live nodes for the GL (81 %), GL-1xSM (82%) and GL-2xSM (81 %) treatments than for control canes on the trellis (66%). However, due to the relatively mild winter all treatments had sufficient fruiting potential so that they could be easily crop adjusted to a level of 3 tons/acre.

(3) Long-term Influence of Hilling-up/Taking-out Around Grapevines - Pinot gris grapevines at the Moersch Farm near Baroda, MI were managed with and without soil hilling-up each fall and take-out of that soil each spring from 1996 to 2002. Over that time greater numbers of vines that experienced no hilling-up/take-out exhibited crown gall and/or winter injury than those that did (Fig. 2). The increase in injury was especially notable after the very cold winter of 1998-1999. Pruning to include frequent trunk renewal reduced the incidence of crown gall/winter injury in both treatments in succeeding years. Most importantly, over the 7-year period of this study the mortality of vines was the same in both treatments at a level of 3%.

Communication Activities, Accomplishments and Impacts:

Information from this research has been and will be shared with growers in several ways to include presentations at the Northwest Orchard and Viticulture Show, Southwest Michigan Hort Days, Great Lakes Expo, etc. This work is featured at vineyard meetings to include the Southwest Michigan Wine Growers, Parallel 45 Growers' meetings and the MSU Viticulture Field Day.

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