"Smoke Taint" in Michigan Wine Grapes & Fruits

Smoke Taint is a problem experienced throughout the global wine industry that destroys hundreds of millions of dollars in product. Much of the problem can be reduced through education and collaborative efforts to protect vineyards. Learn what smoke taint is and how to protect your vineyard and/or wine production investment.

What is Smoke Taint? Smoke Taint occurs when wine grapes and fruit are exposed to smoke during the growing season or during fermentation. The "taint" produces flavors ranging from "wet ashtray" and "sweaty socks" to "burnt meat"… all undesirable flavor profiles when marketing wines. The taint is usually undetectable when tasting the fruit. However, the fermentation processes release and amplify the volatile chemical compounds caused by smoke taint known as phenols. Thus a small batch of smoke tainted fruit that is mixed with other unexposed fruit can contaminate and ruin an entire batch, which creates significant financial loss.

What are the risks? Smoke taint losses have exceeded $360,000,000 in a single year and the problem is rapidly expanding. Australia alone has invested over four million in research to better understand and manage the problem to protect their wine industry. Because the smoke taint cannot usually be tasted until after fermentation, the risk for significant product loss exists. As the saying goes, "One bad apple can ruin the whole bunch," so it goes with smoke taint. The smoke taint problem is at its worst when vineyards are exposed to smoke from wildfires, though just smoke from burning nearby vineyard or orchard prunings can create significant issues. Michigan experiences 8,000 to 10,000 wildfires per year. Additionally, vineyards often exist side by side with orchards, row crops and other areas where smoke producing fire is frequently used. All fruits are susceptible. However, wine grapes are especially vulnerable. In addition to Smoke Taint risks, vine development and productivity loss are experienced years after exposure. Smoke related issues fully develop with as little as a 30% smoke obscuration exposure for 30 minutes.

How do I know if I have Smoke Taint? Thanks to significant amounts of funding and research in the past decade, tests now exist that will detect phenols prior to fermentation. In some areas regulations and individual buyers now mandate this test before a crop can be sold. Because the risk of contaminating unaffected fruit is high, if there is reason to believe it has been exposed to smoke, any vineyard or orchard fruit that will be fermented should be tested. Attempts to find a way to remove Smoke Taint from the final product thus "salvaging" tainted wines, has proved elusive, but recent gains show promise.

How can I reduce the risk? While wildfire size and occurrence is rising faster than even conservative predictions, there are many measures that can be taken before, during and after wildfire to protect your infrastructure, crops and products. First learn your area's wildfire risks and conduct a risk assessment on your property. You can apply "Firewise on the Farm" principals to protect property and structures. Create a "Fire Management Plan" for your farm that addresses your specific needs. For instance, do you know that wine grapes need water after exposure to heat, smoke and fire; however watering if ash is present on the ground can PH shock your vines and take them out of production for three years. Receive information and technical support from Michigan State University Extension as well as other sources. Talk with your neighbors about smoke taint, fire risks and becoming "Firewise".

For Additional Information and Resources: The Michigan Firewise Program
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