



Washington Guide to Sustainable Viticulture

CHEMICAL MANAGEMENT

HOW DO I MANAGE CHEMICALS USED IN GRAPE PRODUCTION?

Washington State Department of Agriculture regulates the registration and application of crop protection chemicals. When using pesticides, always read and follow the label carefully, noting timing, temperatures, volume, application method, nozzle size, rate, worker reentry, and days to harvest intervals. Avoid drift.

CHECKLIST OF QUESTIONS TO ANSWER

1. Pesticide Safety and Selection

- a. Have I read and do I understand the laws pertaining to pesticide use?
 - Am I complying with all pesticide safety, handling, use, and worker training in pesticide safety regulations?
 - When selecting chemicals for use in my vineyard, do I make sure that I understand all of the legal and worker safety issues associated with its use?
 - Have I read the label, noting crop use, rate, type of application?
 - Is the chemical labeled for use in the state my vineyard is located, for use on wine grapes, and for the purpose I'm applying it?
- b. Do I avoid pesticides labeled DANGER-POISON when possible for the safety of my employees, myself, and the environment?
- c. Do I understand resistance management practices that can help avoid development of resistance by the pest, disease, or weed?
- d. Do I have a pesticide emergency response plan posted?
 - Are wash facilities, eye wash, first aid, and clean up equipment available for spills and accidents?
 - Are workers trained in an emergency response plan?
 - Are workers wearing protective clothing, gear, or equipment, if necessary?

2. Pesticide Applicators

- a. Do I need a license to apply these chemicals?
 - Do I have a pesticide applicators license that meets the requirement for my current pesticide use?
- b. Do I document all of my pesticide applications throughout the year, with date, time, weather, and reason for application?
 - Does the winery require copies of all pesticide records?
- c. Am I applying chemicals in an effective legal and environmental way that ensures the long-term sustainability of my vineyard?

3. Mixing and Loading

- a. Have I developed a mixing and loading station that will minimize the chance of chemicals leaching or run off into nearby streams or environmentally sensitive areas?
- b. Are chemicals added to the tank in an order that encourages mixing?
 - Am I following the mixing order that is specified on the label?
 - If using additives not on the label, have I conducted a jar test order that encourages proper mixing? (See jar test in Definitions.)

4. Sprayer Maintenance and Calibration

- Do I know how to calibrate my sprayer to ensure that proper dosage and coverage is achieved?
- Do I routinely check pesticide sprayers and applicators for maintenance and calibration needs and to maximize their effectiveness and reduce waste or potential environmental hazards?

5. Drift

- Am I attempting to minimize drift by making an effort to discontinue sprays when wind velocity or inversions create high enough drift risk?
- Do I use an accurate wind gauge to estimate wind velocity?
- Do I follow buffer zone requirements when spraying to ensure that chemicals do not drift on sensitive areas (fish-bearing waterways, homes, roads, etc.)?

6. Chemical Storage

- Are pesticides stored securely and in a safe, legal way, storing as little material as possible, to reduce the risk of incidence?
- Am I disposing of my chemicals in a legal and environmental way?



DEFINITIONS/EXPLANATIONS

Calibration of spray equipment is extremely important for economic and crop safety reasons.

Pesticides are most cost effective and perform optimally when applied at labeled rates. Too much pesticide can injure crops; too little can give inadequate or unreliable control. Careful calibration is essential to proper sprayer operation and the economic return on the small investment of time can be substantial. To learn how to calibrate sprayer equipment, visit the following:

[Calibration of air blast sprayers Part 1, Dr. Andrew Landers, Cornell University](#) (YouTube video)

[Calibration of air blast sprayers Part 2, Dr. Andrew Landers, Cornell University](#) (YouTube video)

[Calibration of Equipment](#) (pdf document)

[Calibration of Sprayers](#) (pdf document)

Inversion is when the layer of air near the earth is cooler than an overlying layer of warmer air. An inversion is an extremely stable layer of the atmosphere, which inhibits upward air motion and mixing of the air layers and traps air contaminants underneath.

Jar test is a valuable tool used to indicate problems that may result from mixing incompatible spray tank additives, such as combining pesticides with liquid fertilizer. Applying a tank mix of different pesticides or pesticides and fertilizer can save time and money, but it can also result in reduced pest control and damage to non-target plants if the materials are incompatible.

Instructions for conducting a jar test are found at:

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RESOURCES

- [Washington State Department of Agriculture pesticide use and regulations handbook](#)
- [Pesticide registration laws in Washington State](#)
- [WSDA worker protection standards and laws](#)
- [WSDA chemical/pesticide storage laws](#)

