

## 2020 LIVE VINEYARD CHECKLIST

The checklist is organized by topic into **chapters**. Each chapter is comprised of **control points**.

**R Red Control Points:** These control points and the red items within them are required to receive a passing score on the checklist.

**Y Yellow Control Points:** To achieve credit for a yellow control point, the property must comply with 50% of the corresponding yellow items. While we highly recommend aiming for 100% compliance on yellow control points, a property may miss one and still pass the checklist.

**G Green Items:** Green items are found within red and yellow control points and are considered bonus items. To receive a passing score on the checklist, you must comply with a minimum of 50% of the *available* green bonus items—for control points with more than 3 green bonus items, you may only get credit for a maximum of 3 items (although you should record your responses for all of them). This is to encourage properties to achieve bonus points without concentrating too heavily on any one area of improvement.

## 1 FARM MANAGEMENT, DOCUMENTATION, AND TRAINING

### 1.1 Documentation and scope of management practices

- 1.1.1 **R** The grower documents and monitors all key pressure occurrences on the farm. A key pressure is defined as an agricultural pest, disease, or other challenge that (1) causes region-wide and significant economic damage and (2) requires annual monitoring and treatment. Refer to the LIVE Green List for regional lists of key pressures in vineyards.
- 1.1.2 **R** The grower uses appropriate cultural and biological pest prevention and control measures consistent with the LIVE Green List, which outlines these for each key pressure.
- 1.1.3 **R** The grower documents all applications of EPA-registered pesticides on the farm—including insecticides, herbicides, fungicides, et al. The LIVE Pesticide Reporting Form is provided as a template and is highly encouraged to be used. Please note that foliar fertilizers should be reported on the LIVE Fertilizer Reporting Form, and adjuvants (including surfactants) should be reported on the LIVE Other Inputs Reporting Form. Refer to item explanation for detailed documentation requirements.
- 1.1.4 **R** The grower documents all fertilizer applications on the farm. This includes ground-applied, fertigated, and foliar products. The LIVE Fertilizer Reporting Form is provided as a template. Refer to item explanation for detailed documentation requirements.
- 1.1.5 **R** The grower documents all irrigation applications. The LIVE Irrigation Reporting Form is provided as a template. Refer to item explanation for detailed documentation requirements.
- 1.1.6 **R** The farm operates with a traceability system that allows its products and their certification status to be identified and traced from point of sale back to the farm's production records. The grower maintains adequate documentation of this system. Product purchased from other farms is clearly identified for tracking purposes.
- 1.1.7 **R** The grower maintains all other documentation necessary to demonstrate compliance with LIVE requirements. This includes, but is not limited to: other inputs (in addition to pesticides, fertilizers, and water for irrigation), sprayer calibration and service records, soil and petiole analysis, etc.
- 1.1.8 **R** The grower maintains truthful documentation demonstrating compliance with LIVE requirements for a minimum of three years, and is providing access to documentation (upon request) to LIVE and its inspectors.
- 1.1.9 **R** The farm operates in accordance with LIVE's whole-farm requirements. This includes meeting Salmon-Safe requirements for the entire property, including non-vineyard land such as other crops and landscaping. Refer to item explanation for

details and definition of whole-farm.

- 1.1.10 **G** The grower has submitted the annual reporting ten or more days prior to the deadline (i.e. by November 30 of the current growing season).
- 1.1.11 **G** The grower uses LIVE-formatted reporting forms, either webforms (preferred) or Excel templates.

## 1.2 Training of farm management team

- 1.2.1 **R** A member of the vineyard management team has completed a LIVE general training course, which includes: the LIVE Annual Meeting; any LIVE General Training Sessions; or review of the LIVE Member Training document.
- 1.2.2 **G** A member of the vineyard management team has completed at least one qualifying additional training during the year. Additional trainings include any LIVE lecture, wine industry symposium, educational conferences, extension field days, etc.
- 1.2.3 **G** A member of the vineyard management team has completed more than one qualifying additional trainings during the year. Additional trainings include any LIVE lecture, wine industry symposium, educational conferences, extension field days, etc.

## 2 BIODIVERSITY AND ECOLOGICAL INFRASTRUCTURES

### 2.1 Ecological infrastructures

- 2.1.1 **R** The grower documents and defines all ecological infrastructures and their surface areas on a farm map. The map shows a clearly defined property line and describes each ecological infrastructure including dimensions. The surface area of ecological infrastructures totals at least 5% of the property acreage (excluding buildings and managed woodland). Ecological infrastructures are areas of the farm that are either left wild or managed for the express purpose of promoting biodiversity, wildlife corridors, landscape level continuity, and/or habitat for beneficial fauna.
- 2.1.2 **R** The grower maintains and/or improves existing ecological infrastructures on the farm.
- 2.1.3 **R** Ecological infrastructures are planned and maintained to achieve spatial continuity and connectivity within the farm. Spatial interruptions between infrastructures receive attention in the farm's management strategy.
- 2.1.4 **G** Ecological infrastructures connect the farm to surrounding habitat.
- 2.1.5 **G** The grower has established new ecological infrastructure on the farm during the last growing season, either inside the crop area or outside within a 500 foot

radius.

- 2.1.6 **G** The surface area of ecological infrastructures totals at least 10% of the entire farm property acreage (excluding buildings and managed woodland).
- 2.1.7 **G** The surface area of ecological infrastructures totals at least 15% of the entire farm property acreage (excluding buildings and managed woodland).
- 2.1.8 **G** The surface area of ecological infrastructures totals at least 25% of the entire farm property acreage (excluding buildings and managed woodland).
- 2.1.9 **G** The farm has undergone a regionally appropriate habitat assessment.
- 2.1.10 **G** The farm is undergoing habitat conservation and/or restoration in a manner consistent with its regional conservation strategy.

## 2.2 Management practices to enhance biodiversity

- 2.2.1 **R** The grower has identified any potential forage and habitat resources for its desired pest enemies, and has noted the distances between these potential resources and the farm's crop areas. Please include descriptions and distances in the notes for this item.
- 2.2.2 **R** The grower has implemented at least three practices on the farm from the list of green items below (items 2.2.3-2.2.9).
- 2.2.3 **G** The grower selects equipment to reduce environmental impact and enhance biodiversity on the farm.
- 2.2.4 **G** The farm has infrastructures outside the crop area with high diversity (five or more plant species), with native species preferentially encouraged.
- 2.2.5 **G** The farm has at least one patch of beneficial plant species of at least 15 square feet in size, maintained within 150 feet of crop area.
- 2.2.6 **G** The farm provides pollinator food and water sources throughout the season and the grower protects these as sensitive areas.
- 2.2.7 **G** The grower identifies and/or provides bee nest sites and protects these as sensitive areas.
- 2.2.8 **G** The grower maintains nesting boxes and/or perches for birds annually.
- 2.2.9 **G** The farm has a minimum of ten non-noxious plant species in the alleyway/intervine strip.
- 2.2.10 **G** The grower takes steps to control weeds on the local state/provincial noxious weed list that are consistent with best management practices for IPM.
- 2.2.11 **G** The grower has completed the LIVE Biodiversity Assessment Tool. This item applies to Willamette Valley members only, all others enter N/A.

### 2.3 Buffer zones between crop area and sensitive off-crop areas

- 2.3.1 **R** The grower maintains a minimum distance of 30-50 feet between crop area and sensitive off-crop area (see item explanation for examples). The minimum distance between crop area and sensitive off-crop area is 50 feet where slopes are greater than 10 degrees.
- 2.3.2 **G** The grower maintains a minimum distance of more than 50 feet between crop area and sensitive off-crop area.

### 2.4 Riparian vegetation protection and restoration

- 2.4.1 **R** The farm map outlines and describes riparian areas, including the size and quality of stream buffer areas. The map indicates areas where riparian function is impaired as well as wetland and upland vegetation on farms.
- 2.4.2 **R** Riparian zones or cultivation setbacks of perennial waterways (year-round flow) and seasonal waterways potentially harboring salmonids are an average of 50-100 feet wide, with a minimum width of 35 feet.
- 2.4.3 **R** Riparian zones and buffer areas are adequately vegetated. Riparian zones and buffer areas are vegetated, contiguous with the channel, and adequately protect water resources.
- 2.4.4 **R** If 100 percent avoidance of disturbance to the riparian zone and buffer area is not possible, impacts are minimized and mitigated to maintain the function and quality of buffers and the water resources they protect.
- 2.4.5 **G** Problem invasive plants within riparian buffers are identified, removed, and replaced with suitable plant species adapted to site conditions.
- 2.4.6 **G** New plantings for buffers are selected to improve overall biodiversity on a site within the constraints of project conditions. Vegetation selected is a diverse mixture of native or noninvasive, non-native species, with a priority given to selection of native species.
- 2.4.7 **G** Where riparian buffer zones are already established, high priority is given to establishing tree canopy cover over salmonid-bearing and potentially salmonid-bearing streams in ways comparable to undisturbed local reference conditions.
- 2.4.8 **G** Dying trees, snags, and downed logs are left undisturbed in riparian buffer areas to provide cover, forage, and habitat complexity for species that use these ecosystems.
- 2.4.9 **G** Water from areas where runoff tends to concentrate is detained and treated before being discharged to the riparian buffer.

### 2.5 Wetland and upland protection and restoration

- 2.5.1 **Y** In dedicated agricultural production areas, wetlands are protected by a minimum 25 foot uncultivated buffer or to the greatest extent operationally feasible.
- 2.5.2 **Y** Impacts to wetland functions, including water quality, water quantity, and habitat connectivity impacts, are minimized within 100 feet of wetlands to the greatest extent operationally feasible.
- 2.5.3 **G** Problem invasive plants in both wetlands and wetland buffers are identified, removed, and replaced with suitable plant species adapted to site conditions. Whenever possible, native species are selected over other plants.
- 2.5.4 **G** Wetlands and wetland buffers should be vegetated consistent with local intact reference wetland conditions.
- 2.5.5 **G** If no livestock are kept on the property, wetlands and wetland buffers may be unfenced to allow unhindered access for local wildlife. Grazing by livestock is minimized and properly managed in wetland areas.
- 2.5.6 **G** Degraded wetlands and wet areas exhibiting poor agricultural productivity have been identified. When possible, there is a plan to remove these areas from production and to restore natural functions to the greatest extent operationally feasible.
- 2.5.7 **G** In upland areas, dying trees, snags, and downed logs are left undisturbed in riparian buffer areas to provide cover, forage, and habitat complexity for species that use these ecosystems.

## 2.6 In-stream habitat protection and restoration

- 2.6.1 **R** Stream and river crossings, in-stream structures, irrigation diversion structures, ponds, and any known historic channel manipulations are inventoried and locations are noted on a site map.
- 2.6.2 **R** Existing stream crossings, including roads and trails, are minimized on the farm property. Stream crossings avoid filling, excavating, or straightening of stream channels; unnecessary removal of wood; and disconnection of off-channel wetlands and ponds.
- 2.6.3 **R** When a new crossing is established, it is designed to avoid impacts to in-stream habitat, allow fish passage, and avoid constriction of flood conveyance during 25-year, 24-hour storm events.
- 2.6.4 **R** Existing channels are protected from new impacts such as filling and excavation, straightening, unnecessary stream crossings, excessive stormwater runoff from agricultural operations and disturbed areas, unnecessary removal of wood, or disconnection of off-channel wetlands.
- 2.6.5 **R** Irrigation ponds that have the potential to have adverse impacts on stream

temperature and water quality are not constructed or planned.

- 2.6.6 **R** Irrigation diversion structures are designed to allow adult and juvenile fish passage and do not trap fish.
- 2.6.7 **G** Key in-stream habitat quality deficiencies have been identified, and active efforts are being taken to restore stream channels to their natural conditions using techniques such as bioengineered bank stabilization (typically using a combination of large wood, plants, and other material to stabilize banks) and habitat enhancement.
- 2.6.8 **G** Unnatural in-stream barriers to fish and wildlife have been removed. If barriers exist, plans are in place to remove these barriers.
- 2.6.9 **G** Existing levees have been removed (or set back to avoid encroachment upon the floodplain), floodplains are restored to the greatest extent operationally feasible, and no new levees are proposed.

### 3 SITE SELECTION

#### 3.1 Suitability of site

- 3.1.1 **R** Site conditions are compatible with regionally or generally accepted standard for the crop.

#### 3.2 Risk assessment and correction plan

- 3.2.1 **Y** New sites used for agricultural production have a site development plan, including a risk assessment, available for inspection. Enter N/A if there have been no new plantings in the last three years.
- 3.2.2 **Y** A written plan has been developed to address controllable risks.
- 3.2.3 **G** Impacted federal and state/provincial sensitive species are surveyed and documented.

### 4 SITE MANAGEMENT

#### 4.1 Alleyway/intervine strip management

- 4.1.1 **R** In areas that receive more than 15 inches annual rainfall, at least 75% of the vineyard floor has green alleyway cover between November 1st and March 1st. In areas that receive less than 15 inches annual rainfall, other types of cover may be acceptable.
- 4.1.2 **R** Less than 50% of the vineyard floor under and between vine rows has been treated with herbicide, or no herbicide was used.

- 4.1.3 **R** The grower's weed control strategy addresses weed shifts. See item explanation for details on rotating the mode of action for weed control.
- 4.1.4 **R** The grower has completed the LIVE Weed Survey on all vineyard blocks during an appropriate time of year within the two years prior to use of any residual herbicides listed on the LIVE Yellow List.
- 4.1.5 **G** Flail/mulching mowers are only used to chop prunings. All other mowing is done with rotary mower.
- 4.1.6 **G** Management of the vineyard floor employs methods that promote biodiversity in a manner consistent with regional conditions.
- 4.1.7 **G** The grower uses an alternating mowing regime to promote season-long flowering in the vineyard.

## 4.2 Herbicide Reduction

- 4.2.1 **Y** The grower has completed the LIVE Weed Survey on all vineyard blocks during an appropriate time of year within the two years prior to use of any herbicide(s) listed on the LIVE Yellow List.
- 4.2.2 **Y** Grower limited the use of glyphosate during the growing season on vines four years and older to one or fewer application in LIVE Region 1, or two or fewer applications in LIVE Region 2, not including noxious weed control and fenceline vegetation management.
- 4.2.3 **G** The area treated with herbicide below the grapevines is less than 25% of row spacing.
- 4.2.4 **G** The grower has used no herbicides on the farm in the past two seasons, including but not limited to weed management or vine removal.
- 4.2.5 **G** The grower has permanently eliminated the use of herbicides from the farm's viticulture.

## 4.3 Soil fertility and soil protection

- 4.3.1 **R** If soil erosion is evident, immediate corrective action is taken.
- 4.3.2 **R** The grower's choice of cultivation reflects assessment of site-specific risk and soil conditions.
- 4.3.3 **R** The grower does not use soil fumigation or chemical products with highly residual properties. The grower's use of EPA-registered pesticides conforms with the products listed for the vineyard's region on the LIVE Yellow List.
- 4.3.4 **G** Cover crops are present in the vineyard over winter, covering at least 95% of the vineyard floor.
- 4.3.5 **G** Biomass-building cover crops, compost, or mulches are used to maintain or



improve soil organic matter.

4.3.6 **G** All organic farm waste is recycled on-farm.

4.3.7 **G** The farm's selection and timing of machinery use reduces soil compaction and preserves organic matter.

## 5 VARIETIES, ROOTSTOCK, AND PLANTING

### 5.1 Choice of varieties, clones, and rootstock

5.1.1 **Y** Varieties, clones, and rootstock used are appropriate for the site and local growing region.

5.1.2 **Y** Pest and disease resistant or tolerant varieties, clones, and/or rootstocks appropriate for the site and local growing region are considered.

5.1.3 **G** The grower has established experimental blocks to test site suitability for varieties, clones, and rootstocks.

### 5.2 Plant material quality and health

5.2.1 **Y** Plant material for newly grafted vines comes from mother vines (both scion and rootstock) that have tested negative for economically significant viruses (LR1,2,3 and GRBV).

5.2.2 **Y** For field-grafted plants, the grower has sampled both the vines to be grafted and the budwood to be used in grafting prior to grafting taking place. Virus infected plant material is not used. See Notes for sampling procedure and viruses to be sampled for.

5.2.3 **Y** Purchased clonal material is accompanied by a certificate that verifies the variety, clone, rootstock, quantity, date, and source.

### 5.3 Use of genetically modified organisms (GMOs)

5.3.1 **R** There are no genetically modified organisms (GMOs) used on the farm.

### 5.4 Pre-planting and training systems

5.4.1 **R** Soil analysis and mapping has been performed prior to vineyard planting.

5.4.2 **G** Advanced soil survey techniques were used in the development of the vineyard.

5.4.3 **G** Nutrient deficient soils have been amended prior to planting based on soil analysis.

## 6 PLANT NUTRITION

## 6.1 Nutrient management plan

- 6.1.1 **R** The grower has developed a nutrient management plan that incorporates results of soil and tissue tests. Deviations from this strategy must be documented and justified.
- 6.1.2 **R** Soil nutrient analysis has been performed within the last seven years.
- 6.1.3 **R** Tissue nutrient analysis has been performed within the last three years using a sampling method appropriate for the size of the vineyard (speak with your lab for guidance). If vines are younger than five years old, choose N/A.
- 6.1.4 **G** Annual tissue analysis is performed.
- 6.1.5 **G** A nutrient balance sheet has been developed for the entire farm for all macro- and micronutrients. This consists of actual nutritional inputs minus exports from farm. Calculate this using standard nutritional content for wine grapes and applicable crops.
- 6.1.6 **G** Soil organic matter content is known for the farm.
- 6.1.7 **G** An unfertilized test plot is established.
- 6.1.8 **G** Total amount of each individual nutrient (N, P, K, Mg, B, Zn, etc.) applied per acre and per plot is documented.

## 6.2 Nutrient-loss reduction measures

- 6.2.1 **R** Precautions are taken to avoid potential nutrient losses due to over-fertilization, water and wind erosion, and leaching.
- 6.2.2 **G** At least two nutrient-loss prevention measures have been established.

## 6.3 Nutrient supply and timing

- 6.3.1 **R** Nitrogen applications are performed in accordance with a fertilizer plan. Deviations from this plan are justified and recorded.
- 6.3.2 **R** Direct applications of synthetic nitrogen occur only between March 1 and October 30, while healthy leaves are still functioning.
- 6.3.3 **R** Nitrogen applications are based on documented need and are consistent with regional replacement values.
- 6.3.4 **R** The amount of phosphorus, potassium, and magnesium applied should not exceed either nutrient replacement values or regional limits set by LIVE. See the LIVE Green List or Mullins Nutrient Replacement Chart for these values. Deviations of 10% or more from the amount stated in the fertilizer plan are documented and justified.
- 6.3.5 **G** Vineyard practices are used to encourage mycorrhizal development to enhance

phosphorous and water uptake.

#### 6.4 Storage of fertilizers

- 6.4.1  Y Fertilizers are stored separately from pesticides to prevent cross-contamination.
- 6.4.2  Y Fertilizers are stored in a covered, dry, and clean area.
- 6.4.3  Y Fertilizers are stored separately from fresh produce and plant propagation material.
- 6.4.4  Y Fertilizer are stored in an appropriate manner to avoid water contamination.
- 6.4.5  Y Fertilizer storage units are secured when not in use.
- 6.4.6  G Fertilizer stock inventory list is kept up-to-date and available on the farm for inspection.

#### 6.5 Human sewage sludge (GlobalGAP requirement)

- 6.5.1  R Human sewage sludge is not used on the farm.

#### 6.6 Organic materials testing

- 6.6.1  R Fertilizers and waste-compost (i.e. manure) obtained from off-farm sources must have been analyzed for heavy metals and nutrient content prior to application. If there is a concern about contaminating toxins, additional analysis may be required. If components are purchased individually, testing can be performed either before or after compost is built. OMRI-approved compost has already been tested and does not need additional analysis.

### 7 IRRIGATION

#### 7.1 Irrigation planning, monitoring, and decision-making

- 7.1.1  R The farm has an irrigation plan that specifies water sources, an irrigation strategy for each block, methods of irrigation and determining quantity of water used, and tools used to make irrigation decisions.
- 7.1.2  R The grower uses irrigation only when plant physiology or visual/quantitative data evidence need. Visual and quantitative data include: visual symptoms, ET data, soil moisture monitoring, and more. Evidence of need is documented in irrigation records. See item explanation for details.
- 7.1.3  R The maximum amount of water applied has not exceeded the soil water holding capacity.

#### 7.2 Irrigation methods

- 7.2.1 **R** The grower has not used flood irrigation on the farm.
- 7.2.2 **G** The grower does not use overhead sprinklers for irrigation on the farm.
- 7.2.3 **G** The grower uses microirrigation (i.e. drip irrigation) on the farm.
- 7.2.4 **G** The grower routinely monitors the performance of irrigation system equipment to ensure that motors, pumps, and delivery systems are performing well and according to specifications.

### 7.3 Water quality

- 7.3.1 **R** If irrigating, regardless of source, an irrigation suitability test is performed on the water source(s) within the last five years. Analysis must show no adverse ag-pollutants. If water is not suitable for irrigation, an action plan must be presented that addresses the issue in a reasonable time frame. See item explanation for details and test requirements.
- 7.3.2 **R** The grower has not used untreated sewage water for irrigation/fertigation. See item explanation for details.
- 7.3.3 **G** The irrigation water test that is taken every five years also contains copper testing. This is typically an additional item on standard irrigation suitability tests.
- 7.3.4 **G** Annual analysis of water quality is performed, testing for heavy metals, nitrogen, and Na/Cl.

### 7.4 Water source

- 7.4.1 **R** Irrigation water is obtained from a legal, state-approved, and sustainable water source.

### 7.5 Water use management to protect fish

- 7.5.1 **R** For farms with a choice of irrigation water sources, the selected source of irrigation water results in the least potential impact to in-stream flows of fish-bearing streams both on farm property and downstream of it.
- 7.5.2 **R** Fish losses from entrapment are avoided by installing fish screens on diversions in accordance with Washington Department of Fish and Wildlife (WDFW, 2000), Oregon Department of Fish and Wildlife (ODFW), or other similar guidance specific to the farm's geographic location.
- 7.5.3 **R** Work on diversions, including installing and servicing pumps and intakes, is only done when salmon are not present in streams, during approved in-stream work periods, and in accordance with state and local regulations and permits.
- 7.5.4 **G** If the only available irrigation source is salmon-bearing or potentially salmon-bearing streams, irrigation withdrawals are not harming fish or significantly limiting habitat quality for fish.

- 7.5.5 **G** If excess water rights that are not used for crop production exist for the property, the grower has leased these excess water rights to the Washington Water Project of Trout Unlimited, Oregon Water Trust, Washington Water Trust, the Columbia Basin Water Transactions Program, or other regionally appropriate water trust.

## 8 INTEGRATED PROTECTION MEASURES FOR FARM CROPS

### 8.1 Application of the LIVE Green and Yellow lists

- 8.1.1 **R** The grower demonstrates knowledge of at least two key beneficial insects for the region and has a strategy that addresses their protection.
- 8.1.2 **R** The grower employs the Integrated Pest Management (IPM) measures outlined in the LIVE Green and Yellow Lists in an appropriate manner. See item explanation for details.

### 8.2 Recording pests and diseases, and applying thresholds

- 8.2.1 **R** Pests and disease have been monitored and recorded per university IPM guidelines. See item explanation for details.
- 8.2.2 **G** Monitoring traps are used in the vineyard as a scouting tool.

### 8.3 Use of pesticides

- 8.3.1 **R** If EPA-registered pesticides (insecticides, fungicides, herbicides, etc.) are used, the grower's use of these materials on vineyard land complies with the listings and limits on the LIVE Yellow List.
- 8.3.2 **R** If the farm has non-vineyard land (other crops, gardens, landscaping, etc.), no pesticides are used that are found on the Salmon-Safe List of High Hazard Pesticides unless a variance has been issued from Salmon-Safe.
- 8.3.3 **R** The grower does not apply pesticides in dust form.
- 8.3.4 **R** The grower has rotated mode of action when applying pesticides on the farm. Pesticide mode of action is rotated (excluding sulfur, oil, and biofungicides). For herbicide resistance management requirements, see Chapter 4.
- 8.3.5 **G** The grower uses less than 20 pounds of sulfur per acre.
- 8.3.6 **G** The grower communicates with neighboring farms to ensure that mode of action (MOA) rotation is occurring on contiguous properties.
- 8.3.7 **G** The grower does not use botryticides within three weeks of harvest.

### 8.4 Other inputs used in the vineyard

- 8.4.1 **Y** The grower records all other inputs used in the vineyard on the LIVE Other Inputs Reporting Form. These are defined as inputs added to a crop by any means with the purpose of either influencing the health, production or establishment of the crop, or aiding in the influence of EPA-registered pesticides or fertilizers to the crop. Examples of other inputs are: spray tank adjuvants; non-EPA-registered pest control compounds, chemicals or treatments; graft seal; plant hormones; plant vitamins; polymer moisture retention soil additives; mycorrhizal inoculum; etc.

## 8.5 Pre-harvest intervals (PHI) and residue levels

- 8.5.1 **R** If EPA-registered pesticides are used, the grower has recorded and conformed to required pre-harvest intervals (PHI).
- 8.5.2 **G** The grower has not applied pesticide for powdery mildew after 50% color change (véraison).

## 8.6 Pesticide storage conditions

- 8.6.1 **R** Pesticides are secured in storage in accordance with state and federal law.
- 8.6.2 **R** Dry pesticides are stored above liquid ones.
- 8.6.3 **R** A pesticide stock inventory is current and available on the farm.
- 8.6.4 **R** Emergency measures (e.g. emergency phone numbers) are clearly visible in measuring and mixing area.
- 8.6.5 **R** Each pesticide is stored in or with its original labeled package.
- 8.6.6 **G** Pesticide mixing/loading station exceeds state and federal environmental standards.

## 8.7 Spray equipment

- 8.7.1 **R** Spray equipment is serviced by a qualified technician at least once every four years.
- 8.7.2 **R** Spray equipment is calibrated annually according to manufacturer specifications and documented.
- 8.7.3 **R** Sprayers are operated in a manner that reduces risk of drift.
- 8.7.4 **G** Spray equipment is used that has been proven to reduce pesticide amount and/or drift.

## 8.8 Disposal of agricultural chemicals

- 8.8.1 **R** The safe disposal of obsolete pesticides is planned and recorded.
- 8.8.2 **R** Surplus mix or tank washings are applied over an untreated part of the crop, without exceeding the maximum authorized dose.
- 8.8.3 **R** Empty containers are triple-rinsed and delivered to authorized firms upon disposal.

# 9 HARVESTING AND FOOD SAFETY

## 9.1 Worker hygiene

- 9.1.1 **Y** Workers have access to hand washing equipment and clean toilet facilities located at a distance less than that required by state health and safety requirements.
- 9.1.2 **Y** Adequate drinking water is available to workers as required by state law. Workers are encouraged to take hydration breaks during hot weather.

## 10 MANAGEMENT SYSTEMS ON FARMS WITH LIVESTOCK

### 10.1 Livestock density and animal welfare

- 10.1.1 **R** The farm records show total livestock units and the surface of agricultural land. The livestock units per acre have been calculated based on the LIVE Livestock Unit Conversion Chart and do not exceed one per acre on average when calculated for the whole farm.
- 10.1.2 **R** Holding conditions for livestock satisfy national legal regulations.
- 10.1.3 **G** The livestock density does not exceed one livestock units per five acres agricultural surface. If the density is higher, the farmer has made a delivery contract for the excess manure with farmers that have no livestock or can absorb the imported manure without exceeding the critical livestock density.

### 10.2 Animal management

- 10.2.1 **R** On pasture lands, adequate forage remains or is restored throughout the year to protect soil and root systems, promote water infiltration and soil fertility, and to filter surface water runoff.
- 10.2.2 **R** Corridors and trails used to move livestock around pastures or to rangeland are managed to limit gullying and erosion, and to preserve vegetation cover.
- 10.2.3 **R** Fencing, water gaps, dense vegetation, or other methods are utilized to prevent unwanted livestock access to streams and other fish-bearing water bodies. Alternative watering methods, like solar pumps, nose pumps or wind pumps, are considered.
- 10.2.4 **R** Intensive rotational grazing systems are utilized to help prevent compaction and erosion, maintain adequate stubble heights, and to allow pastures to recover from grazing.
- 10.2.5 **R** Forage areas are routinely monitored for invasive plant populations.
- 10.2.6 **R** Watering facilities are installed that limit or eliminate the need for livestock to have access to streams and irrigation ditches, whenever operationally feasible.
- 10.2.7 **R** There is a manure management system in place to prevent contamination of surface or groundwater by animal waste. There is no evidence of manure leachate overflow from manure storage areas.



- 10.2.8  R There is a manure storage management plan in place, taking into consideration a 25-year, 24-hour storm event.
- 10.2.9  R In general, sufficient storage capacity to store 120 to 180 days of manure production, unless the operation has access to other environmentally acceptable methods to recycle manure nutrients.
- 10.2.10  R All manure or compost piles are covered during rainy periods, or another leachate containment system appropriate to the scale of the compost system is in place. Non-commercial-scale compost piles may not need to be covered, and grass buffers may be used as containment if there is no evidence of runoff.
- 10.2.11  R Confined livestock facilities, manure piles, liquid storage tanks, and lagoons are not located in floodplains or areas with shallow groundwater tables or frequently moist or saturated soils.
- 10.2.12  R Livestock confinement and manure storage facilities are designed to prevent any direct or indirect flow of manure into streams, rivers, or other surface waters in the event of sustained heavy rains and runoff, ruptures in storage tanks, leaching from in-ground pits, or breaching of storage lagoons.
- 10.2.13  R If manure is applied to fields and pastures, it is done so at agronomic rates, preferably in the form of compost. This field application should not be done during the rainy season. Where appropriate, fields are dragged to ensure even distribution of manure.

## 11 WORKER HEALTH AND SAFETY

### 11.1 Health and safety responsibilities, instructions, and training

- 11.1.1  Y A member of the management is clearly identified as the responsible person for worker safety, health and welfare issues.
- 11.1.2  Y A hazard communications program is actively communicated to the workforce.
- 11.1.3  Y Each worker operating dangerous or complex equipment or in enclosed spaces have received formal training. This training can be performed by a vineyard employee authorized to do so.
- 11.1.4  Y New employees receive orientation training including Workers' Right to Know, and all training is documented.

### 11.2 Accident procedures and protective clothing/equipment

- 11.2.1  Y First aid kits are available and accessible in the vicinity of the work area.
- 11.2.2  Y Written accident and emergency procedures describe how to act in the event

of an accident or emergency. They must clearly identify the contact persons, indicate the location of the nearest phone, display an updated list of relevant phone numbers (doctor, ambulance, fire-department, hospital, police, etc) and make the phone accessible all the time.

- 11.2.3 **Y** An accident procedure visually displays the basic steps of primary accident care and is accessible within 30 feet of the pesticide storage facilities and all mixing areas.
- 11.2.4 **Y** Workers applying pesticides in open cab tractors have a set of personal protective equipment (PPE).
- 11.2.5 **Y** All personnel who apply pesticides can demonstrate their competence via official qualifications or specific training course attendance certificates.
- 11.2.6 **G** Permanent and legible signs are posted that indicate potential hazards (e.g. waste pits, fuel tanks, electrical equipment, toxic material, pesticide and fertilizer storage facilities).

### 11.3 On-site living quarters

- 11.3.1 **R** The living quarters for the workers on the farm are habitable, have a sound roof, windows and doors, and the basic services of drinking water, clean toilets and free-flowing drains.

### 11.4 Worker rights and benefits

- 11.4.1 **R** Illegal child labor is not used (GlobalGAP requirement).
- 11.4.2 **R** Forced labor is not used (GlobalGAP requirement).
- 11.4.3 **G** Wages paid for regular working hours exceed legal minimums.
- 11.4.4 **G** Regular meetings are held between labor and management at which general health, safety, and welfare matters are discussed.
- 11.4.5 **G** Healthcare benefits and/or services are provided to the workers
- 11.4.6 **G** Agricultural exempt employees are paid overtime wages.
- 11.4.7 **G** Employees are provided with opportunities for continuing education and professional development.
- 11.4.8 **G** Worker well-being is regularly assessed and documented, and corresponding workplace improvements are made. See notes for reference materials.