

**FINAL REPORT
DEPARTMENT OF PESTICIDE REGULATION'S PEST MANAGEMENT
GRANTS**

**CENTRAL COAST WINE GRAPE GROWER
NATURAL VINEYARD TEAM**

PRINCIPLE INVESTIGATOR: Craig Rous, Grant Contact and Team Facilitator, Robert Mondavi Winery

COMMUNITY GROUP REPRESENTATIVES: Dana Merrill, Team President, Coastal Valley Management

Steve McIntyre, Team Treasurer/Secretary, Monterey Pacific

EXECUTIVE SUMMARY:

The Central Coast Wine Grape Grower Natural Vineyard Team has successfully brought together growers from the geographically diverse Central Coast Winegrape region with University of California farm advisors, grape buyers, a consultant, California State officials, and Robert Mondavi Winery to create a natural winegrape growing Positive Points System. This document (see attached) is patterned after other successful positive points programs that reward and recognize growers who use environmental protection and enhancement as a cornerstone in their farming practices.

The team participated in two seminars in the Spring (1997) to introduce, explain, and encourage the use of the Natural Wine Grape Growing Positive Points System to Central Coast growers, local government officials and the public. Before the seminars, they evaluated how the Positive Points System worked on team and non-team member vineyards. By using the Positive Points System as a measuring stick, the team measured current status of reduced risk practices, as well as evaluated the effectiveness of the Positive Points System. The team plans on creating Positive Points System demonstration vineyards that will be used to study the economic and environmental effects of using the system as a long-term guide in their farming practices. Finally, the team plans on bringing

growers, consumers, environmentalists, and the press to the demonstration vineyards to educate them about IPM success in the Central Coast.

RESULTS:

Group Formation Objectives:

1. *Improve customer relations based on science and honesty.*

This goal's objective was to encourage open dialogue among team members without fear of repercussions or ridicule. This objective is crucial in the formation of any team since trust in your fellow team members must occur for the team to work together and grow. The diverse nature of the team, traditionally groups that hadn't worked together, is an indication of the success of this objective.

2. *Involve government agencies.*

The team has clearly succeeded in this objective by having team members from the University of California Cooperative Extension and the California Department of Food and Agriculture (CDFA).

3. *Identify groups or people with creative points of view.*

The team identified two groups, California Clean and Sun Maid Raisins, as groups with unusual or creative ideas. The team visited both groups in late May (1996). Each group contributed valuable insight as the team put together the Natural Wine Grape Growing Positive Points System.

4. *Promote adoption of reduced risk practices.*

This objective has two targeted groups. The first is the team members themselves. By reviewing current practices and examining old ones, it was easy to see how much progress has been made in the last few years. This served to remind the group how far we have come and to excite the team about how much more we can do. Some on the team really thought we hadn't progressed very far until we reviewed the past and current techniques. The second targeted group is growers that are not on the team. The Spring 1997 seminars reached growers not on the team by having team members present the system "grower to grower". The Natural Wine Grape Growing Positive Points System was explained as a way not only to farm using reduced risk

practices, but as a way to promote these practices beyond grower groups to the consumer.

5. *Take the message to other growers.*

This was accomplished, as explained above, by presenting the Positive Points System at the grower seminars in the Spring of 1997.

Technical Objectives:

1. *Develop a Central Coast vineyard pest protocol.*

The original intent of this objective was to create a document that outlined each pest, what contributed to its presence or accumulation in the vineyard, and to prioritize its control using the most environmentally safe treatments first. After struggling with this concept for several meetings, the team instead decided to create a positive points system that was patterned after a Swiss and Massachusetts model. This system of giving points to growers for environmentally enhanced growing practices was favored for several reasons. One was that it allows individual growers flexibility in dealing with different pest problems at different environments. The second was that the system rewards growers for positive practices rather than focusing on negative practices. A third reason was that the system is easy to understand, explain, promote, and publicize. And the fourth was the ability to use the Natural Wine Grape Growing system as a documentation of the region-wide reduced pesticide use.

This documentation is a crucial use of the Positive Points System. Currently there is no way to measure improvement in pest management techniques. Since the system scores growing practices on a year-by-year basis, an improvement in the Positive Points score will demonstrate adoption of reduced risk practices.

Initial examination of several blocks in different areas has confirmed the flexibility of the system. It has also shown that there are wide differences between blocks grown in different ways. For example, a brand new vineyard planting will score much higher than an older one because it has been designed to take advantage of new techniques that reduce pesticide use.

2. *Identify and catalogue printed resources available to growers.*

The list (see attached) were the reference publications that the team used in creating its natural Wine Grape Growing protocol.

Reference Resources Used

1. University of California Grape Pest Manual.
2. University of California Grape Pest Management Guidelines.
3. Compendium of Grapevine Diseases.
4. American Society of Enology and Viticulture Journal.
5. American Society of Enology and Viticulture Seminar Booklets.
6. University of California SAREP Publications.
7. Farmer to Farmer magazine.
8. California Farmer magazine.
9. Department of Pesticide Regulations Pesticide Use Report Summary.
10. US EPA Registered Materials List.

Central Coast Natural Vineyard Team

**Natural Winegrape Growing
Positive Points Protocol**

**Ninth Revision
18 March 1997**

**Central Coast Vineyard Team
Positive Points System Evaluation Sheet**

Vineyard Name _____ Block(s) _____

Vineyard
Address/Location _____

County _____

Acreage of Block(s) or Farming Unit being scored _____

Age of Vines being scored _____

Grower Name _____ Date _____

Total acreage of grapes at this location _____

Begin each category by answering the questions in order by section and number. First read the goal for each section, and if you take the full points, skip to the following section. If you do not take the full points, answer each question in the section. Enter number of points earned per question. A "yes" answer gains the designated points, and a "no" answer gains zero. If the question addresses an issue that is not required or not applicable to your vineyard situation, take the points designated for that particular question.

I. Pest Management

200 Total Points Possible

Section A	Section B	Section C	Section D	Section E	Total Points Earned
1.(8)	1.(6)	1.(10)	1.(8)	1.(5)	
2.(6)	2.(5)	2.(6)	2.(8)	2.(5)	
3.(5)	3.(6)	3.(5)	3.(6)	3.(5)	
4.(4)	4.(5)	4.(5)	4.(6)	4.(5)	
5.(4)	5.(5)	5.(7)	5.(6)	5.	
6.(4)	6.(5)	6.(6)			
7.(4)	7.(5)	7.(7)			
8.(4)		8.(7)			
9.(4)		9.(5)			
10.(4)					
11.(4)					
Total	Total	Total	Total	Total	
(51)	(37)	(58)	(34)	(20)	

Central Coast Vineyard Team Positive Points System Evaluation Sheet

II. Soil Management 200 Total Points Possible

A	B	C	D	E	F	G	
1.(8)	1.(5)	1.(4)	1.(7)	1.(6)	1.(9)	1.(7)	Total Points Earned
2.(7)	2.(4)	2.(5)	2.(6)	2.(5)	2.(6)	2.(7)	
3.(7)	3.(4)	3.(5)	3.(6)	3.(6)	3.(6)	3.(7)	
4.(7)	4.(4)	4.(4)	4.(5)	4.(6)	4.(6)	4.(7)	
5.(7)	5.(4)	5.(4)	5.(5)	5.(5)			
	6.(4)		6.(5)				
Total							
(36)	(25)	(22)	(34)	(28)	(27)	(28)	

III. Water Management 200 Total Points Possible

Section A	Section B	Section C	Section D	Section E	
1.(14)	1.(6)	1.(8)	1.(8)	1.(6)	Total Points Earned
2.(14)	2.(5)	2.(8)	2.(8)	2.(6)	
	3.(5)	3.(8)	3.(7)	3.(6)	
	4.(6)	4.(7)	4.(8)	4.(6)	
	5.(6)	5.(7)	5.(8)		
		6.(5)	6.(8)		
		7.(5)	7.(7)		
		8.(8)	8.(10)		
Total	Total	Total	Total	Total	
(28)	(28)	(56)	(64)	(24)	

IV. Viticultural Management 200 Total Points Possible

Section A	Section B	Section C	Section D	
1.(12)	1.(8)	1.(10)	1.(8)	Total Points Earned
2.(12)	2.(7)	2.(10)	2.(8)	
3.(12)	3.(7)	3.(10)	3.(10)	
4.(14)	4.(6)	4.(20)	4.(8)	
	5.(6)		5.(10)	
	6.(6)		6.(6)	
	7.(10)			
Total	Total	Total	Total	
(50)	(50)	(50)	(50)	

Central Coast Vineyard Team Positive Points System Evaluation Sheet

V. Wine Quality 100 Total Points Possible

Section A	Section B	Total Points Earned
1.(7)	1.(10)	
2.(7)	2.(10)	
3.(7)	3.(20)	
4.(7)	4.(10)	
5.(7)		
6.(8)		
7.(7)		
Total	Total	
(50)	(50)	

VI. Continuing Education 100 Points Total

Section A	Section B	Section C	Total Points Earned
1.(7)	1.(5)	1.(11)	
2.(7)	2.(5)	2.(11)	
3.(7)	3.(5)	3.(10)	
4.(12)	4.(5)		
	5.(5)		
	6.(5)		
	7.(5)		
Total	Total	Total	
(33)	(35)	(32)	

Cumulative Points for all Categories 1000 Total Points Possible

Category	Points Earned	Points Possible
I. Pest Management		200
II. Soil Management		200
III. Water Management		200
IV. Viticultural Management		200
V. Wine Quality		100
VI. Continuing Education		100
Total		1000

Typical Ranges of Points Earned:

- Older Vineyards (10 years +) 500-700 points
(Present manager did not make pre-plant decisions)
- Newer Vineyards (<10 years) above 700 points
- (Present manager did participate in pre-plant decisions)

Central Coast Vineyard Team Positive Points System -Summary of Goals and Objectives

Successful, sustainable vineyard farming is comprised of several aspects, each being equally important. A program that integrates the best management practices relating to pests, soil, water and viticulture will result in the production of high quality wine grapes. Continuing education and improving wine quality using sustainable farming methods are the primary objectives of the Central Coast Vineyard Team Positive Points System protocol.

Vineyard pest management is dynamic. Growers must determine the safest and most effective practices for their particular vineyard. Integrated Pest Management includes regular monitoring of vines for pests or damage, the use of best management practices that prevent pest buildups or damage, and the responsible use of control techniques. Sustainable farming methods that minimize incidence and spread of insect pests, diseases and weeds are outlined in the protocol. Our endeavor is to reduce (or eliminate) chemical inputs while maintaining good production and fruit quality.

Good stewardship of the land is a prerequisite to good farming. As soil structure and nutrient content affect vine vigor, a healthy vine can often tolerate more pest damage or better compete with weeds than a less healthy one. Conservation of the naturally occurring beneficial soil characteristics is essential for sustainable farming. Erosion control, soil fertility monitoring and the use of cover crops and compost contribute positively to the maintenance of good soil structure and nutrient content.

Good water management also results in healthy vines, and more uniform maturation of the crop. An effective program of monitoring water quality, water use and the distribution uniformity of the irrigation system can lead to conservation of water resources while meeting vine water needs. A well designed on-farm water management system prevents off-site water movement and non-point source pollution of surface and ground waters. The goal is to achieve the most beneficial and efficient use of applied irrigation water.

Sound viticultural management practices use the natural conditions to promote healthy vines. Appropriate decisions regarding vine spacing, density, row orientation, trellis type and rootstock can reduce or avoid many vineyard problems. Choosing the best *V. vinifera* cultivars and clonal selections for the growing area will certainly enhance resultant wine quality.. Good canopy management also insures sound fruit.

The very best wine quality attainable is the ultimate achievement. As harvest is the culmination of an entire year of work in the vineyard, the condition of the fruit upon arrival at the winery is critical. The goal is to provide the winery with grapes in the best possible condition, and possibly to surpass the winery's expectations.

Wine quality is founded in the vineyard. The grower and winemaker work together to produce a particular wine style. All vineyard employees are part of the team working to produce the best grapes possible. An important goal of the protocol is to promote the vineyard as a safe and desirable place to work.

Continuing education is an on going process. Vineyard and winery personnel need to learn and stay aware of the best techniques and latest developments regarding sustainable farming, quality grape growing and quality wine production.

Public perception of grapegrowing is an important part of wine marketing. Educating the public about the positive aspects of sustainable grape growing is essential. Quality wine making is an art, and quality grape growing is a craft.

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Central Coast Vineyard Team

Mission Statement: The Central Coast Vineyard Team will identify and promote the most environmentally safe, viticulturally effective, and economically sustainable farming methods; while maintaining or improving quality and flavor of wine grapes. The team will be a model for wine grape growers and will develop the public trust.

Positive Points System - Eighth revision
(Bianchi, Bettiga, Broome, Cobb, Hoerisch, Holt, John, LaVine, Lucas, McIntyre, Merrill, Newton, Padgett-Johnson, Roberts, Rous, Smith, Thomas)

Category	Total Points
Pest Management	200
Soil Management	200
Water Management	200
Viticultural Management	200
Wine Quality	100
Continuing Education	100
Total	1,000

Rate your vineyard on a per block or farming unit basis.

I. PEST MANAGEMENT**OBJECTIVE:**

The vineyard pest management situation is dynamic. Pest outbreaks, pest resistance problems and new sampling and monitoring techniques require that growers determine for themselves the safest and most effective practices for their particular vineyard. The objective is to understand which pests can cause damage and under what conditions damage is likely to occur. An Integrated Pest Management program includes regular inspection of plants for pests or injury, use of the best crop management practices that prevent pest buildups or damage, and responsible use of control techniques that are applied only after pests have exceeded the economic threshold.

A. INSECT MONITORING/MANAGEMENT/CONTROL

Goal: To use sustainable farming methods that minimize insect buildups or damage to vines and crop, eventually eliminating the need for chemical insect treatment. If wine quality is maintained by a pest management program where broad-spectrum insecticides are no longer necessary take full points (51) for Section A.

- 8 points 1. Are you familiar with the insect pests found (and likely to be found) in your vineyards?
- 6 points 2. Are you knowledgeable about the life cycles of your vineyard pests?

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- 5 points 3. Are you familiar with the natural predators and beneficial insects that prey upon or parasitize your pest species?
- 4 points 4. Do you track weather data and degree days during the season?
- 4 points 5. Do you have an aggressive monitoring program in place to detect the presence and determine population dynamics of your vineyard pests?
- 4 points 6. When possible, do you remove the alternate host plants of a pest species (ex. Bermuda grass, elderberry / sharpshooter leafhoppers, or mustard/orange tortrix)?
- 4 points 7. If your vineyard has root lesion or citrus nematodes, do you plant Blando brome or barley (winter cover crops that are adverse to these nematodes)? If your vineyard does not have these nematodes, take the 4 points.
- 4 points 8. Do you use pheromone traps, sticky tape or sticky cards to trap insects?
- 4 points 9. Do you time your sprays to the appropriate brood hatch for maximum effectiveness?
- 4 points 10. When you need to spray, do you first opt for the "softer" insecticides, i.e., soaps, Bt, horticultural oils, plant derivatives, etc.?
- 4 points 11. Do you recognize the "hot" spots in your vineyard and use them as indicators for your spraying decisions (i.e., spraying on a block by block basis, instead of spraying the entire vineyard)

B. DISEASE MONITORING/MANAGEMENT/CONTROL

Goal: To use sustainable farming methods that minimize incidence and spread of diseases that result in damage to vines and crop, and to work toward reducing the use of chemicals for disease control. If wine quality is maintained by a disease management program where chemical use has been reduced, take full points (37) for Section B.

- 6 points 1. Are you familiar with the diseases that are likely to be found in your vineyards?
- 5 points 2. Do you know the causal agents of these diseases and their method of spread?
- 6 points 3. Do you have aggressive programs in place to monitor for the presence and severity levels of the diseases that are likely to occur in your vineyard?
- 5 points 4. Do you use the Grape Powdery Mildew Index or Botrytis disease pressure models to help schedule spray applications?
- 5 points 5. Do you regularly practice sanitation for those diseases which are spread by infected tissue left in the vineyard (Bunch rot, phomopsis, crown gall)?

5 points 6. Do you regularly use cultural practices that deter the spread of disease (for example: late pruning/ *Eutypa* , avoidance of trunk injury/ crown gall, leaf removal / *Botrytis cinerea*)?

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5 points 7. Do you have a weather station, a weather data logger, max-min thermometers or rain gauges in your vineyard, and do you use these as tools to modify your cultural practices?

C. WEED MONITORING/MANAGEMENT/CONTROL

Goal: To use sustainable farming methods that minimize weed growth that competes with vines or harbors diseases or insects. These methods eventually eliminate the need for chemical weed control. If wine quality is maintained by a vineyard floor management program where chemical weed control is no longer necessary take full points (58) for Section C.

- 10 points 1. Are you familiar with the weed species that grow in your vineyard?
- 6 points 2. Do you use mechanical methods of in-row weed control (weed badger, French plow, Bezzeredi, Clemens weeder)?
- 5 points 3. Do you manage your weeds in the middles as a natural cover crop?
- 5 points 4. Do you "mow and blow" your cover crop up on the berms for weed suppression?
- 7 points 5. Do you treat your most problematic weeds at a time when they are most susceptible to the herbicide (ex. field bindweed at flowering/ glyphosate)?
- 6 points 6. Do you use a systemic, contact herbicide material as a spot treatment instead of spraying the entire berm?
- 7 points 7. Have you discontinued the use of triazines or other problematic herbicides that may leach into the groundwater (ex. simazine)?
- 7 points 8. When you use herbicides, do you adjust your label rate to your weed pressure?
- 5 points 9. When you use herbicides, do you consider your soil type when deciding on your application rate?

D. BENEFICIALS RECOGNITION/MONITORING/RELEASES/HABITAT

Goal: To keep aware of the latest information on biological controls for grape pests to be able to recognize the beneficial species in your own vineyard. If wine quality is maintained by conservation or release of beneficial species for pest management take full points (34) for Section D.

- 8 points 1. Are you familiar with the beneficial insects that naturally occur in your growing region?
- 8 points 2. Do you monitor the degree of parasitism on your pest, or monitor the populations of your beneficial insects?

- 6 points 3. Do you provide year-round habitat or refuges to encourage the presence of beneficial insects (French prune trees /*Anagrus epos*; cover crop/spiders)?
- 6 points 4. Do you release beneficial insects in your vineyard as an alternative to needed pesticide treatments?
- 6 points 5. Do you provide owl or raptor refuges for bio-control of rodents?

E. OTHER

- 5 points 1. Have you sealed or do you regularly water your vineyard roads for dust abatement?
- 5 points 2. Do you use exclusion methods for vertebrate pest control (deer fence, wire mesh cylinders or grow tubes around new vines, bird netting)?
- 5 points 3. Do you routinely calibrate your sprayer and replace worn nozzles and screens in order to insure the best coverage and efficacy for your agricultural chemical applications?
- 5 points 4. When making a spray application, is the tractor driven at the proper speed that optimizes coverage?
5. If you applied a **Category I** or a **Restricted** material this growing season, you must **deduct 25 points**. (see appendix for list of **Category I** and **Restricted** materials)

II. SOIL MANAGEMENT

OBJECTIVE

Good stewardship of the land and soil is a prerequisite to good farming. Soil structure and nutrient content affect vine health and vigor. A healthy vine can often tolerate more pest damage or better compete with weeds than a less healthy one. The objective is to conserve or improve naturally occurring beneficial soil characteristics and use best management practices to correct any deficiencies in soil tilth, water or nutrient status.

A. SOIL MONITORING/PLANT ANALYSIS

Goal: To conserve and maintain the naturally occurring chemistry and fertility of the soil that promotes vine growth; to detect potential imbalances (e.g., toxicities, deficiencies) that may deter vine growth. If you have begun or are maintaining a soil and plant monitoring program that includes all the components take full points (36) for Section A.

- 8 points 1. Do you periodically monitor your soil for nutrient content (NO_3^- , NH_4^+ , P, K^+ , Ca^{+2} , Mg^{+2} , organic matter content)?
- 7 points 2. Do you routinely monitor your soil's pH, EC, and toxicities (Na^+ , Cl-, B)?
- 7 points 3. Do you have a yearly program of bloomtime petiole collection for plant nutrient analyses?
- 7 points 4. If your vines have nutritional problems, have you correlated your soil tests to your leaf petiole tests?

- 7 points 5. Have you aerial photographs of your vineyard site (either infra-red or standard film)?

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B. PRE-PLANT SOIL STRUCTURE MODIFICATION

Goal: To correct soil-related impediments to vine health and growth prior to planting. If you detected soil-related problems and corrected them before planting take full points (25) for Section B.

- 5 points 1. Before planting, did you have your soil tested for pH, salinity, cation exchange capacity (CEC) and soil-borne pests?
- 4 points 2. If your soil was alkaline or saline, did you apply gypsum CaSO_4 , or conversely, if your soil was acidic, did you apply limestone $\text{Ca}(\text{CO}_3)_2$ to help neutralize the acidity?
- 4 points 3. Did you have backhoe pits dug prior to planting to investigate the soil profile and to determine possible physical impediments to root growth?
- 4 points 4. If your soil harbored vine pests, did you plant it to a non-host crop or allow it to lay fallow to reduce the pest population previous to vineyard planting?
- 4 points 5. If there were physical impediments to root growth or water permeability problems in this block, did you deep-rip, slip plow or install a tile drainage system to correct?
- 4 points 6. Did you incorporate organic matter into the soil prior to planting?

C. POST PLANT SOIL STRUCTURE MODIFICATION

Goal: To correct soil-related impediments to vine health and growth and to reduce farming practices that contribute to deterioration of soil structure. If you have in place a program promoting and maintaining good soil structure in your vineyard, take full points (22) for Section C.

- 4 points 1. Do you maintain a permanent grass sod in your vineyard?
- 5 points 2. Do your soil management practices promote good tilth and a friable soil?
- 5 points 3. Do you periodically have back hoe pits dug in order to monitor vine root growth and soil structure?
- 4 points 4. Do you follow up on the results of the back hoe pits and take corrective measures if needed?
- 4 points 5. Do you use tractors and/or vineyard equipment that minimizes soil compaction, such as high floatation tires or track-layers?

D. EROSION CONTROL

Goal: To conserve soil stability and eliminate erosion and offsite movement of sediments. If you have eliminated erosion take full points (34) for Section D.

- 7 points 1. Do you know your soil series, or have you consulted with your local USDA Natural Resource Conservation Service office to determine your soil series and their respective erosion hazard?
- 6 points 2. Do you know the permeability and runoff rates of your soils and do you irrigate accordingly?
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- 6 points 3. Do you maintain a winter cover crop specifically for erosion control?
- 5 points 4. If your vineyard is on a steep slope, do you cultivate across the slope?
- 5 points 5. If you have a hillside vineyard, do you have water diversions on the longer slopes to transport the runoff safely?
- 5 points 6. Do you practice minimum tillage?

E. COVER CROP

Goal: To preserve or improve soil structure and soil nutrient content, conserve soil stability and eliminate erosion, reduce dust related programs and provide habitat for beneficial insects with the effective use of a cover crop. If you plant and maintain cover crops take full points (28) for Section E.

- 6 points 1. Do you encourage or plant a cover crop in your vine row middles?
- 5 points 2. If your vineyard has a nitrogen requirement, is your cover crop a nitrogen-fixer (clovers, vetches, legumes, etc.)? If your vineyard has no nitrogen requirement, take the 5 points.
- 6 points 3. Is your cover crop an effective habitat for beneficial insects?
- 6 points 4. Have you reduced mite pressure where you maintain a cover crop that effectively keeps the dust level down?
- 5 points 5. If you need to reduce vine vigor, so you manage a cover crop to do so?

F. AMENDMENTS

Goal: To promote and maintain high levels of biodiversity in soil microbiology or correct deficiencies which may affect soil chemistry, water holding capacity or nutrient holding capacity. If you have improved soil organic matter levels and maintained a balanced soil chemical status take full points (27) for Section F.

- 9 points 1. Do you add any organic matter such as compost, manure, pomace, municipal green waste to your soil?
- 6 points 2. Do you incorporate green manure from your cover crop into your soil?
- 6 points 3. If your soil is alkaline or saline, do you apply gypsum CaSO_4 ?
- 6 points 4. If your soil is acidic, do you apply limestone $\text{Ca}(\text{CO}_3)_2$ to help neutralize the acidity?

G. COMPOSTING

Goal: To divert agricultural organic wastes to the vineyard soil in order to benefit soil tilth and health. If you are producing compost for your vineyard take full points (28) for Section G.

- 7 points 1. Do you include pomace from the winery in your vineyard composting program?
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- 7 points 2. Do you divert green waste from the waste stream to your composting program (i.e. municipal green waste, other crop or food processing residues)?
- 7 points 3. Do you effectively manage your fresh organics into compost by using effective composting techniques, such as application of moisture; turning, and temperature monitoring?
- 7 points 4. Do you support commercial compost programs by purchasing compost?

III. WATER MANAGEMENT

OBJECTIVE

Good water management results in healthy vines, enhances resistance to pests, improves weed control, promotes uniform maturation of the crop and is a responsible use of a natural resource. An effective program in monitoring of water quality and distribution uniformity can lead to the conservation of water resources and quality while meeting vine water needs. A well designed and maintained on-farm water management system prevents off-site water movement and non-point source pollution of surface and ground waters.

A. MONITORING WATER QUALITY

Goal: To monitor water quality, water resources available for irrigation, and energy efficiencies of the water application system. If you keep records of water quality and well and pump performance tests, take full points (28) for Section A.

- 14 points 1. Do you periodically have your water tested for pH, electrical conductivity (EC), sodium adsorption ratio (SAR), nitrates (NO_3^-), sodium (Na^+), chlorides (Cl^-), and boron (B) levels?
- 14 points 2. Do you periodically have your well(s) tested for pump energy efficiency, and monitored for changes in water yield (gallons per minute) and draw-down?

B. OFFSITE WATER MOVEMENT

Goal: To prevent off-site movement of irrigation water and sediments, and to eliminate non-point source pollution of surface waters. If you have eliminated off-site movement of water take full points (28) for Section B.

- 6 points 1. Do your irrigation practices minimize run off?

- 5 points 2. Do you have prevention techniques in place for containment of any irrigation or rainfall run off?
- 5 points 3. Do you have devices in place to divert water away from public roads (sprinkler guards, flow channels)?
- 6 points 4. Do you have a subsurface drainage system in place where needed?
- 6 points 5. If you have a soil permeability problem, have you used amendments to improve water infiltration?

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C. IRRIGATION SYSTEM EFFICIENCY MAINTENANCE

Goal: To use available water resources in the most efficient and uniform manner possible. If your irrigation system is operating at peak efficiency take full points (56) for Section C.

- 8 points 1. Are you using a low-volume system (e.g. drip) for irrigation?
- 8 points 2. Are you using a low volume system (e.g. pulsators) for frost control?
- 8 points 3. Do you routinely test your irrigation system for distribution uniformity and application efficiency by monitoring emitter outflows and pressure differences across the block?
- 7 points 4. If you use drip irrigation, is your irrigation efficiency (beneficial use as compared to amount of water applied) at 90% or better?
- 7 points 5. Do you regularly inspect and clean your filters?
- 5 points 6. Do you regularly flush out your irrigation lines?
- 5 points 7. If required, do you perform chemical maintenance of your irrigation system to prevent plugging?
- 8 points 8. Do you have flow meters on your wells or other pumps to keep track of your water usage over the season?

D. IRRIGATION SCHEDULING AND AMOUNT

Goal: To achieve the most beneficial use of applied irrigation water while conserving water resources and eliminating non-point source pollution of groundwaters. If you use and record the water budget method in your vineyard take full points (64) for Section D.

- 8 points 1. Do you know the effective rooting depth of your soils?
- 8 points 2. Do you know the amount of water available in your soil profile at budbreak?
- 7 points 3. Do you keep track of your seasonal rainfall?
- 8 points 4. Do you use monitoring devices (gypsum blocks, neutron probes, tensiometers) to track soil moisture depletion?
- 8 points 5. Do you use Evapo-Transpiration (ET) calculations as one of your tools to determine your irrigation requirements and follow an ET budget for the season? (ET data available through CIMIS,

- California Irrigation Management Information System 1-800-92CIMIS, or 1-800-922-4647)
- 8 points 6. If your soil builds up salts, do you know your leaching requirements? (If you have no salinity problems, take the 8 points.)
- 7 points 7. Do you practice water conservation, for example, irrigating at night when the ET demand is at its lowest?
- 10 points 8. Where past local experience has indicated improved wine quality, have you experimented with deficit irrigation timings?

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E. FERTILIZATION / FERTIGATION

Goal: To apply required fertilizers in the most efficient manner and eliminate non-point source pollution of groundwaters. If you have optimal fertilizer use efficiency through the use of fertigation take full points (24) for Section E.

- 6 points 1. Do you use your leaf petiole analysis results as a guide, and take into account vine vigor and fruit quality when making fertilizer application decisions?
- 6 points 2. Do you consider your water quality analysis prior to choosing fertilizer materials in order to prevent plugging of your irrigation system?
- 6 points 3. If you need to fertilize, do you fertilize by injection into your irrigation system (fertigate)?
- 6 points 4. If you do fertigate, do you have back-flow prevention devices in place to protect against contamination of water sources?

IV. VITICULTURAL MANAGEMENT

OBJECTIVE:

Decisions made prior to establishment of a vineyard may result in production practices which are environmentally safe and sustainable. Many vineyard insect and disease problems can be reduced or avoided by making informed choices prior to planting.

A. SPACING/ORIENTATION/DENSITY

Goal: To establish a vineyard which uses natural conditions to promote a healthy microclimate within the canopy and conservation of soil and water resources within the block. If you have matched your vineyard design to the site conditions take full points (50) for Section A.

- 12 points 1. Did you consider disease management when laying out your row orientation?
- 12 points 2. Is the spacing matched to the potential vine vigor?
- 12 points 3. Did you consider erosion hazard when choosing row orientation?

- 14 points 4. Was wine quality a consideration in your orientation/spacing decision?

B. ROOTSTOCK / SCION / CLONE

Goal: To select a rootstock and scion that will eliminate the need for chemical or cultural intervention to correct a problem with vine vigor, a pest problem, or an environmental condition that would impact either vine health or wine quality. If you have matched the vineyard site to rootstock/scion combinations take full points (50) for Section B.

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- 8 points 1. Are you using disease and/or pest resistant rootstocks?
 7 points 2. Are you using certified materials?
 7 points 3. Did you consider soil characteristics when choosing your rootstock?
 6 points 4. Is the scion matched to your growing region?
 6 points 5. Do you have a rootstock trial on your site, or have you used information obtained from a similar site (other grower or U.C. trials) when making your rootstock choices?
 6 points 6. Do you have a clonal selection trial on your site, or have you used clonal information obtained from a similar site when making your scion choices?
 10 points 7. If you have trials on your vineyard, is the fruit from your trials harvested and vinted separately for later evaluation ?

C. TRELLISING

Goal: To use the optimum trellis design to balance vine capacity and wine quality. If you have matched your trellis system to local conditions and rootstock/scion vigor take full points (50) for Section C.

- 10 points 1. Are you using a trellis system that accommodates your vine vigor?
 10 points 2. Are you using a trellis system that promotes good canopy microclimate, i.e., improved sunlight exposure or air movement?
 10 points 3. Have you modified or retrofitted your existing trellis system in order to improve canopy microclimate and improve wine quality?
 20 points 4. Do you have a trellis trial plot, or have you used data from local trials to determine which trellis system is the best suited to your site for wine quality improvement?

D. CANOPY MANAGEMENT

Goal: To monitor the canopy microclimate to insure sound and quality fruit. To take corrective actions to improve the canopy microclimate when existing conditions may adversely affect vine health or wine quality. If you have improved the wine quality

of your fruit through effective canopy management techniques take full points (50) for Section D.

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| 8 points | 1. | Are you monitoring your canopy microclimate (light meters, atmometers, leafwetness/relative humidity/ temperature sensors)? |
| 8 points | 2. | Is your fruit-to-pruning weight ratio between the range of 5-10? |
| 10 points | 3. | Do you rate or score your canopy pre-harvest (evaluate sunlight exposure, count number of leaves/clusters, R. Smart vineyard scoring system, point quadrat)? |

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|-----------|----|--|
| 8 points | 4. | Are you managing shoot density to promote fruit separation, i.e., shoot thinning, shoot positioning, sterile shoot removal where needed? |
| 10 points | 5. | Are you removing leaves in the fruit zone to reduce disease, pests or improve wine quality? |
| 6 points | 6. | Do you adjust your pruning to keep each vine in balance (fruit/foilage)? |

V. WINE QUALITY

OBJECTIVE:

The very best wine quality attainable is the ultimate achievement. Harvest is the culmination of an entire year of work in the vineyard and the condition of the fruit upon arrival at the winery is a critical part of the process.

A. MEET CONTRACT PARAMETERS

Goal: To provide the winery with grapes in the best possible condition. If your fruit meets or surpasses the winery's expectations, take full points (50) for Section A.

When your fruit is delivered to the winery:

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| 7 points | 1 | Is your grape °Brix within specified contract optimum? |
| 7 points | 2. | Is your juice pH within specified contract optimum? |
| 7 points | 3. | Is your Material Other than Grapes (MOG) content below specified contract amount? |
| 7 points | 4. | Is the percent rot or mildew in the fruit below specified contract amount? |
| 7 points | 5. | Is the percent sunburned fruit below specified contract amount? |
| 8 points | 6. | Do you know what block(s) each load of fruit was picked from? |
| 7 points | 7. | Prior to harvest, are you able to provide the winery with a reasonably accurate crop projection? |

B. TASTE "YOUR WINE"

Goal: To understand that wine quality is founded in the vineyard. The grower and the winemaker work together to produce a particular wine style. If you and the winemaker work as a team in producing the best wines possible from your vineyard, take full points (50) for Section B.

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| 10 points | 1. | Do you taste and evaluate the wines from your vineyard? |
| 10 points | 2. | After step B,1 above, are you able to determine which of your viticultural practices contributed positively to wine quality? |
| 20 points | 3. | If wine quality needs to be improved, are you attempting to determine which of your viticultural practices can be altered in order to achieve wine quality improvement? |
| 10 points | 4. | Do you regularly confer with the winemaker or winery representative and have him/her in your vineyard to discuss all of the above? |

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VI. CONTINUING EDUCATION

OBJECTIVE: To learn and to stay aware of the latest developments in one's field is crucial to career and personal growth. One must constantly strive to keep informed and remain current. Techniques in grapegrowing are changing and improving; therefore, the grapegrower and winemaker must also change and improve.

A. GROWER

Goal: To remain abreast of the latest developments by reading journals, listening to peers and participating in meetings. If you are fluent with the latest in grapegrowing and pest management techniques, take full points (33) for Section A.

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| 7 points | 1. | Do you regularly attend UCCE, CAWG, ASEV and other industry meetings, seminars and symposiums to keep up to date on grapegrowing and winemaking issues? |
| 7 points | 2. | Do you subscribe to and read farming, trade and industry journals (ex. Journal of South African Enology and Viticulture, American Journal of Enology and Viticulture, Wine Spectator)? |
| 7 points | 3. | Do you have current membership in local growers' and vintners' associations and attend the meetings to keep informed on local issues? |
| 12 points | 4. | Do you own and use a copy of <u>Grape Pest Management</u> , 2nd Edition, UC DANR Publication 3343 ? |

B. EMPLOYEE

Goal: To promote the vineyard as a safe and desirable place to work. The grower must be concerned about the health, safety and continuing education of his/her employees. The employee is an integral part of the team that successfully works together to produce quality wine grapes and quality wines.. If you are in full compliance, have incentive programs in place that promote education and reward employee safety, take full points (35) for Section B.

- 5 points 1. Do you have full compliance with all Department of Pesticide Regulation (DPR), Worker Protection Standard (WPS), SB 198 and Cal-EPA laws and regulations?
- 5 points 2. Do you routinely hold employee safety and training meetings; stressing topics such as the importance of personal hygiene and daily change of clean clothing, safe use and handling of pesticides, and pesticide use notification ?
- 5 points 3. Are your employees encouraged to be team members that contribute to and share the responsibilities of producing quality wine grapes?
- 5 points 4. Have you extended the mandatory re-entry intervals (REI's) beyond the legal minimums stated on the pesticide label?

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- 5 points 5. Do you offer incentives or have an employee safety "rewards" program in place that recognizes and appreciates individuals for safe job performance ?
- 5 points 6. Are your employees each trained to be pest/ disease scouts to help with monitoring in the field?
- 5 points 7. Do you regularly hold informal employee meetings to discuss your growing philosophies and long and short term work goals?

C. WINEMAKER (CUSTOMER)

Goal: Public perception of grapegrowing is an important part of marketing wine. Promotion of the positive aspects of winegrape growing is essential. If you are working to improve the image of grapegrowers and their craft, take full points (32) for Section C.

- 11 points 1. Do you provide full pesticide use reporting to the winery on a monthly basis?
- 11 points 2. Are you involved with the Growers' and Vintners' Associations that strive to educate the public about IPM and sustainable agricultural practices in the vineyard?
- 10 points 3. Are you a part of an aggressive marketing program that educates and promotes the positive image of the Central Coast Vineyard Team and its Positive Points System Protocol, especially in the tasting rooms?

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EPA Category I materials (signal words **Poison / Danger**) and Restricted materials currently registered for use on wine grapes:

- Insecticides
 - Azinphos-methyl (Guthion)
 - Carbaryl (Sevin)
 - Endosulfan (Thiodan)
 - Fenbutatin-oxide (Vendex)
 - Methyl parathion
 - Methomyl (Lannate)

- Soil Applied
 - 1,3-Dichloropropene (Telone II)
 - Aldicarb (Temik)
 - Carbofuran (Furadan)
 - Fenamiphos (Nemacur)
 - Metam sodium (Vapam)
 - Methyl bromide (Brom-o-gas)
 - Chloropicrin

- Herbicides
 - Paraquat (Gramoxone)

- Baits
 - 4-Amino Pyridine (Avitrol)
 - Aluminum phosphide (Phostoxin)
 - Mevinphos (Phosdrin)
 - Sodium cyanide
 - Sodium fluoroacetate (Compound 1080)
 - Strychnine
 - Zinc phosphide

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