

CALIFORNIA SUSTAINABLE WINEGROWING ALLIANCE

Benefiting the environment, the community and high quality grapes and wine



CHAPTER 2

Box 2.1

Filter/Buffer Strips and Perennial Hedgerows

Filter or buffer strips typically are planted with diverse annual or perennial vegetation, based on climate and topography, in non-cropped areas next to vineyards (Tourte et al., 2003, and de Snoo and de Wit, 1998). These strips improve water penetration and infiltration; slow water movement; mitigate erosion and water runoff; and extract sediment, nutrients, and pesticides.

Costs associated with filter strips depend on the type and density of vegetation planted, existing infrastructure such as irrigation systems and machinery, and prices of inputs such as seeds, labor, and water. Costs for strips composed of annual plants incur each year while costs for strips composed of perennial plants can be spread over several years. Growers reported costs savings in labor and equipment, due to lower level of water runoff and reduced needs for repairs (Tourte et al., 2003).

Assuring Water Quality

Impaired water quality is a key risk to successful winegrape farming in terms of production losses, reduced environmental quality, and liability to regulatory action. Ramifications of decreased water quality can be categorized as on- or off-farm.

- 1) On-farm effects from poor water quality on grape production:
 - Plugged irrigation lines, pumps, pipes, and emitters from water contaminants (salts, sediments, etc.)
 - Decreased soil fertility from excess salinity
 - Reduced grape, and subsequently wine, quality because of salt or sediment residues or suboptimal pH
- 2) Off-farm impacts from pollutants transported by water runoff, leaching, or wind:
 - Decreased quality of surface water from sediment, pesticides, or fertilizers
 - Decreased quality of ground water from pesticides or fertilizers

A. Practices to Reduce Risks of Water Quality Impairment

Listed below are sustainable practices that growers can use to protect and improve water quality.

- Regularly monitor the quality of irrigation water: test wells and reservoirs for nitrates, pH, bicarbonate, salinity, dissolved solids, suspended solids, and other concerns
- Amend water, if needed, to address water quality concerns or needs (with gypsum, sulfuric acid, polymers, or other appropriate means)
- Flush irrigation lines and emitters regularly, with diluted acid solution or another appropriate product when water has a high pH. Organic production systems do not allow use of acid; but other organically-approved products are available
- Reduce inputs (fertilizers and pesticides) potentially transported by water runoff (rain events/irrigation) or leaching

Box 2.1 (Continued)

However, growers planting filter strips on productive land experienced loss of income. (See UC Davis Cost and Return Studies at <http://coststudies.ucdavis.edu/current.php>.) Importantly, reported costs and benefits do not apply to every grower and depend on local farm characteristics.

A *hedgerow* is a 'living fence' planted with perennial trees, shrubs, or grass. Hedgerow vegetation is diverse and is typically selected subject to its suitability to the local climate and topography (Tourte et al., 2003). Hedgerows have different functions including decreasing water runoff, increasing water penetration and infiltration, reducing erosion by water and wind, attracting beneficial insects, and beautifying the landscape. Wind protection by hedgerows also may increase productivity (Tourte et al., 2003). For some growers, productive land was used for planting hedgerows. In addition, hedgerows may attract arthropod and vertebrate pests. Costs associated with hedgerows depend on the type and density of planted vegetation, existing farm infrastructure such as irrigation systems and machinery, and prices of inputs such as plants, labor, and water. (See UC Davis Cost and Return Studies at <http://coststudies.ucdavis.edu/current.php>.)



- Use conservation practices which retain soil and prevent, divert, and/or slow and extract pollutants from water runoff (see **Box 2.1**):
 - Filter or buffer strip: strip of dense grass or other vegetation between vineyards and waterways that slows water runoff and extracts sediment and other contaminants
 - Perennial hedgerows: planted vegetation, similar to a filter strip but usually with larger plants like a “living fence,” that has various functions noted in **Box 2.1**
 - Sediment basin: an embankment, spillway, or release structure at the bottom of a sloped vineyard that collects and retains water runoff until sediment settles out before the drainage enters a swale or waterway
 - Straw bale: a straw barrier used to prevent erosion
 - Fabric or plastic materials: strong plastic or filter fabric that can be used to retain soils and prevent erosion
 - Grassed waterways and alleys
 - Cover crops (characterized in next chapter)

B. Support for Implementing Water Quality Protection Methods: EQIP Cost-Sharing

The United States Department of Agriculture Natural Resources Conservation Service (NRCS) offers cost-share assistance through its Environmental Quality Incentives Program (EQIP) to support eligible landowners wanting to implement practices for protecting water, soil, air, and wildlife resources. Through its regional staff and programs, NRCS supports the adoption of sustainable practices by winegrape and other producers or landowners. The following is a partial list of practices and approximate payment rates potentially funded through EQIP. Growers should contact county NRCS offices for updated cost-share opportunities for these and other practices (<http://www.nrcs.usda.gov/about/organization/regions.html>).

Table 2.2: California NRCS 2008 EQIP Example Payment Schedule for Relevant Conservation Practices to Protect Water Resources (page 2-3)

Source: USDA-NRCS, California, 2008.

Practice Code	Practice/Activity Name	Practice/Activity Type	Unit Type	Payment Rate
322	Channel Bank Vegetation (Ac.)	Channel Bank Perennial Herb Vegetation	Acre	\$321.32
322	Channel Bank Vegetation Trees and Shrubs	Channel Bank Tree & Shrub Establishment	Acre	\$535.50
327	Conservation Cover (Ac.)	Seedbed Preparation, Seed & Seeding, Native Orchard/Vineyard	Acre	\$261.78
327	Conservation Cover (Ac.)	Seedbed Preparation, Seed & Seeding, Non-Native Orchard/Vineyard Cover Floor	Acre	\$97.33
327	Conservation Cover (Ac.)	Seedbed Preparation, Seed & Seeding, Non-Native Erosion Control, Water Quality	Acre	\$188.73
340	Cover Crop (Ac.)	Cover Crop, Non-Irrigated	Acre	\$60.85
340	Cover Crop (Ac.)	Cover Crop, Irrigated	Acre	\$112.29
329	Residue Management, No-Till Seeding	No Till	Acre	\$50.00
329	Residue Management, Strip Till Seed	Strip Till	Acre	\$50.00
342	Critical Area Planting (Ac.)	Seed, Hydromulch, Tackifier	Acre	\$499.29
342	Critical Area Planting (Ac.)	Seed, Plant, Hydroseed, Erosion Blanket	Acre	\$1,229.31
342	Critical Area Planting (Ac.)	Seed, Straw Mulch	Acre	\$248.23
344	Residue Management, Seasonal	Tillage Residue Management	Acre	\$30.00
344	Residue Management, Seasonal	Rice Residue Management	Acre	\$30.00
345	Residue Management, Mulch Till	Mulch Till Dust Control	Acre	\$30.00
345	Residue Management, Mulch Till	Mulch Till	Acre	\$30.00
380	Windbreak/Shelterbelt Establishment	Vegetation Control	Foot	\$0.08
380	Windbreak/Shelterbelt Establishment	Establishment-Bare Root	Foot	\$1.14
380	Windbreak/Shelterbelt Establishment	Establishment-1 Gallon	Foot	\$1.26
380	Windbreak/Shelterbelt Establishment (Ft.)	Establishment-1 Gallon Bar Mats	Foot	\$1.47
390	Riparian Herbaceous Cover (Ac.)	Native Riparian Herb, Cover Broadcast	Acre	\$552.29
390	Riparian Herbaceous Cover (Ac.)	Drilled Riparian Herbaceous Cover, Native	Acre	\$449.29
390	Riparian Herbaceous Cover (Ac.)	Non-Native Riparian Herb, Cover Drilled or Broadcast	Acre	\$203.12
393	Filter Strip (Ac.)	Seedbed Preparation, Seed & Seeding, Non-Native	Acre	\$250.00
393	Filter Strip (Ac.)	Non-Native Seedbed Prep, Seeding,	Acre	\$116.67
393	Filter Strip (Ac.)	Native Seedbed Prep, Seeding	Acre	\$393.48
395	Stream Habitat Improvement and Management (Ac.)	Stream Improvement	Acre	\$5,001.60
396	Fish Passage (No.)	Fish Screen - Barrier Removal	CuYd	\$13.20
422	Hedgerow Planting (Ft.)	Hedgerow Planting	Foot	\$1.44
422	Hedgerow Planting (Ft.)	Hedgerow Intensive Planting	Foot	\$1.95
441	Irrigation System, Microirrigation	Establishing Upland Wildlife Habitat	Acre	\$400.00
484	Mulching (Ac.)	Mulch, Moisture and Erosion Control	Ac	\$298.50
570	Runoff Management System	Runoff Management System (PAM)	Each	\$5,000.00
580	Streambank and Shoreline Protection	Streambank & Shore Protect, High Complex	Ft	\$121.97
587	Structure for Water Control	Rock Structure, Wildlife	Each	\$19.00
587	Structure for Water Control	Fish Screen Structure >10cfs	NO.	\$9,950.00
595	Pest Management (Ac.)	Reduced Risk Level 1	Acre	\$30.00
595	Pest Management (Ac.)	Reduced Risk Level 2	Acre	\$95.00
595	Pest Management (Ac.)	Transition to Organic Certification	Acre	\$100.00
636	Water Harvesting Catchment	Catchment	Each	\$750.00
638	Water and Sediment Control Basin	2'X2' concrete box	NO.	\$245.10
638	Water and Sediment Control Basin	Water and Sediment Control Basin	NO.	\$4,902.00
317	Composting Facility	Processing Pad	sq. ft.	\$2.63
317	Composting Facility	In-Vessel Composting System	Each	\$52,500.00

References and Resources

de Snoo and de Wit (1998). Buffer zones for reducing pesticide drift to ditches and risks to aquatic organisms. Ecotox. Environ. Safe. v41 i1. 112-118.

Tourte, L., et al. (2003). Central Coast Conservation Practices - Estimated Costs and Potential Benefits for an Annually Planted Grassed Filter Strip. UC Cooperative Extension. Available at: http://coststudies.ucdavis.edu/conservation_practices/files/12667.pdf.

Tourte, L., et al. (2003). Central Coast Conservation Practices - Estimated Costs and Potential Benefits for Perennial Hedgerow Planting. UC Cooperative Extension. Available at: http://coststudies.ucdavis.edu/conservation_practices/files/12748.pdf.

UC Davis Cost and Return Studies at <http://coststudies.ucdavis.edu/current.php>.

Growers should contact county NRCS offices for updated cost-share opportunities: <http://www.nrcs.usda.gov/about/organization/regions.html>.

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