

Best Management Farming Practices for Water Quality Protection

Cover Crop (327) Fact Sheet

BMP: Soil is covered with vegetation

NRCS Practice Standard: Cover Crop (340)

Planting cover crops is the most cost effective method to reduce erosion and sediment deposition from your property. Cover crops prevent sheet and rill erosion and provide many other benefits on your farm. Benefits include improved water infiltration, nitrogen fixation in the soil, and habitat for beneficial insects. Crop and air quality are protected from dust.



Cover Crops (NRCS Conservation Practice Code 340)

Definition: Grasses, legumes, forbs or other herbaceous plants established in vineyards and orchards to provide seasonal or year round ground cover for conservation purposes.

Purposes:

- Reduce soil erosion from storm runoff
- Increase soil organic matter
- Cycle excess nutrients before reaching waterways
- Increase bio-diversity
- Suppress unwanted weeds
- Manage soil moisture
- Reduce dust
- Manage crop vigor
- Provide habitat for beneficial insects
- Improve water infiltration

CONSIDER THIS:

Establish cover crops by October 15 and maintain throughout rainy season.

Drill or broadcast seed and incorporate into soil.

Choose species compatible with crop.

Avoid using species that are on local weed lists or are hosts to Pierce's Disease.

Use certified weed free straw mulch at 1500 lbs/acre where cover crops are planted late or if rain is likely before cover crop is established.

Avoid tilling early in the spring or late in the fall.

Minimize tillage practices if slopes are greater than 5%.

Use filter strips to filter sediment before it reaches a water body.

Keep on-site erosion control materials such as straw bales or wattles, gravel or geotextile fabrics. Protect stockpiles from rain. Train crews in proper installation techniques.

Check site after each rainfall.

For more information contact your local NRCS office or visit our website at <http://efotq.sc.egov.usda.gov/treemenuFS.aspx>

VINEYARD COVER CROPS

Cover crops have been used in California for over seventy-five years. They are non-economic crops that are grown to improve or maintain soil fertility, improve soil structure and texture, and reduce or eliminate soil erosion.

Cover crops can be divided into 3 categories: (1) Temporary annual grasses, (2) permanent reseeding annual (die when mature) grasses and legumes, and (3) perennial (long-lived) grasses and legumes.

Temporary cover crops are short lived annual grasses intended to provide quick protection cover for one year or less, after the land is cleared and shaped. Barley and Annual ryegrass are examples of a temporary cover crop.

Permanent reseeding annual grasses and legumes are seeded between the vine rows after the vines are planted. These annuals do not need to be planted each year. If allowed to mature in the spring, seed will be available in the fall to produce a new stand. Blando brome, Zorro annual fescue, and Rose clover are examples.

Perennial grasses can be planted for specific problem areas of excessive moisture or high fertility. These year-round grasses have deep roots and produce a wear resistant sod. Berber orchardgrass, Fawn tall fescue, Luna pubescent wheatgrass, and Covar sheep fescue are examples of perennial grass cover crops.

Seeding date: The optimal time to plant is before the winter rains, usually before mid-October. After mid-October, the temperature drops and rainfall increases. Temperature and rainfall have a great effect on cover crop growth. The growth of cover crops planted late, can lag well behind those planted earlier.

Irrigated plantings: When plantings are to be irrigated, maintain adequate moisture in the upper 6 inches of soil during the first 4 weeks, and the upper 12 inches thereafter until the rainy season (during the establishment period).

Seedbed preparation: The area to be planted should be weed free and have a firm seedbed which has previously been roughened by scarifying, disking, harrowing, chiseling, or otherwise worked to a depth of 2 to 4 inches. No implement should be used that will create an excessive amount of downward movement of soil on sloping areas.

Seeding: Seed can be drilled or broadcast by hand, mechanical hand seeder, or power operated seeder. Seed should be incorporated into the soil, but not more than 1 inch deep.

Seeding recommendations depend on site conditions and personal preference. Mature growth heights are approximate and seeding rates are given in pounds per acre using a broadcast method.

TEMPORARY COVER CROPS	LBS/AC
Annual ryegrass (24 to 36")	27
Barley (16 to 30")	135

PERMANENT RESEEDING ANNUALS & LEGUMES		LBS/AC
	Blando brome (12 to 24")	18
	Zorro annual fescue (8 to 18")	12
Mixture #1	Blando brome	12
	Rose clover (6 to 10")	9
Mixture #2	Blando brome	12
	Zorro annual fescue	4
Mixture #3	Zorro annual fescue	8
	Rose clover	9
Mixture #4	Zorro annual fescue	12
	Blando brome	6
	Rose clover	6

PERENNIAL GRASSES	LBS/AC
Berber orchardgrass (12 to 24")	24
Covar sheep fescue (6 to 12")	20
Fawn tall fescue (18 to 24")	36
Luna pubescent wheatgrass (8 to 18")	36

Fertilizing is recommended to help the cover crop grow more quickly during the fall and winter months on nutrient deficient soils. Incorporate fertilizer into the soil at the time of seeding. Ammonium phosphate sulfate (16-20-0) should be applied at a rate of 300 lbs/ac. If soil acidity is a problem, Calcium Nitrate (16-0-0), may be used at a rate of 300 lbs/ac.

Management of the permanent cover crop is essential to maintain the life of the stand. Properly timed mowing and weed control are important factors to perpetuate the cover crop, reduce competition from undesirable weeds, reduce frost hazard, and permit essential cultural operations. Mow timing and frequency depend on species of cover crop, mowing height, weed

growth, and the accessibility to the vineyard. Broadleaf weeds can be controlled by timed mowings, spot spraying, or spraying.

Fertilizer Recommendations: 16-20-0 (ammonium phosphate sulfate) @ 300 lbs/ac

Straw Mulch Recommendations: 1.5 to 2 tons/ac (crimped or tucked in).



Example of cover crop in a vineyard.

Selected Cover Crop Seed Mixes For Napa County Vineyards*

Phillip Blake, Napa County NRCS District Conservationist



Hillside- Shallow Soils “Erosion Control”

"Zorro" annual fescue	40%
"Blando" brome	27%
"Hykon" rose clover	23%

(seeding rate: 25lbs. per acre)

Hillside Quick Erosion Control “Soil Builder”

Red Oats	65%
Crimson clover	13%
Austrian winter pea	22%

(seeding rate: 90 lbs. per acre)

Vineyard Terrace “Slope Stabilizer”

"Blando" brome	45%
"Molate" red fescue	55%

(seeding rate: 25 lbs. per acre)

Hillside Soils -Frequent Mowing-

"Zorro" annual fescue	40%
Subterranean clover	35%
"Hykon" rose clover	25%

(seeding rate: 30 lbs. per acre)

Quick Erosion Control -Cold Soils-

Cereal rye	83%
Crimson clover	17%

(seeding rate: 90 lbs. per acre)

Native, No-till Blend (Mature vineyards)

California meadow barley	36%
"Molate" red fescue	38%
California brome	26%

(seeding rate: 39 lbs. per acre)



**Native, No till Blend
“Low growing”**

Idaho fescue	50%
"Molate" red fescue	50%

(seeding rate: 30 lbs. per acre)

**High Altitude
“Mountain Turf”**

Perennial ryegrass	35%
Creeping red fescue	35%
"Covar" sheep fescue	30%

(seeding rate: 32 lbs. per acre)

Grassed Waterways**

Meadow Barley	41%
California brome	33%
"Blando" brome	26%

(seeding rate: 39 lbs. per acre)

** *straw mulch the seedbed and irrigate to germinate plants before fall rains.*

**Emergency Winter Mix
“Quick Cover”**

Common barley	85%
Annual ryegrass	15%

(seeding rate: 100 lbs. per acre)

**Heavy Use Areas
-Vineyard Headlands-**

Bluebunch wildrye	40%
Cal.meadow barley	27%
California brome	33%

(seeding rate: 45 lbs. per acre)

“Showboat”

Crimson clover	44%
"Hykon rose clover	44%
Wildflower blend-	12%
Yarrow	
Calif. Poppy	
Paper poppy	
Tidy tips	

(seeding rate: 27 lbs. per acre)

- Seed selection and use of fertilizers will vary depending on site conditions, including soil type.
- Seeding rates are based on the broadcast seeding method. If seed is drilled, rates may be lower.
- Check pure-live seed, (PLS) % on seed bag tags- rates listed above are based on 100% PLS.
- Seed variety selection may vary with site conditions. Check with NRCS or your agronomy consultant for site specific recommendations.
- Seed mixes listed, except "quick erosion" and "Emergency Winter Ground Cover" are for no-till management programs.

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