

COVER CROPS FOR THE SIERRA NEVADA FOOTHILLS

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Cover crops are an critical component of most foothill cropping systems. They are important in maintaining soil fertility, retaining water and preventing soil erosion in our high rainfall climate. They may also play a role in pest management.

Why Use Cover Crops?

1. Soil fertility

- Legume cover crops can fix 70 to 250 lbs/acre of nitrogen, depending on species.
- As cover crop plants decay, provide N and other nutrients.
- Grass cover crops can capture applied nitrogen and reduce leaching.
- Deep-rooted cover crops may extract nutrients from the subsoil and deposit them in upper soil layers, making them more available to crop plants.
- Some may increase phosphorous or calcium availability.

2. Increase soil organic matter

- Cover crop roots enhance soil microbial growth.
- Microbes produce substances that contribute to soil aggregation, which can improve water infiltration.

3. Improve soil structure

- Improve soil aggregation and friability (ability to break up)
- Improve soil tilth (workability).

4. Reduce soil erosion

- Vegetative cover reduces impact of rain droplets.
- Plant roots stabilize soil and reduce erosion on slopes and fragile soils.

5. Improve water infiltration or water holding capacity

- Increased organic matter increases pore space, especially in heavy clay soils.
- Increased organic matter acts like a sponge to hold water in sandy soils.
- Roots create tiny channels for water infiltration.

6. Provide weed control

- Cover crops may suppress weed growth between tree and vine rows.
- Cover crops may outcompete some weeds such as Bermuda grass, puncture vine, purslane, nutsedge, yellow starthistle and others.

7. Manage nutrients

8. Mulch

9. Provide habitat for natural enemies

10. Allow growers to get into field earlier in the spring and provide better traction.

11. Improvement in fruit quality – winegrapes

- Cover crops can be used to reduce vine vigor.
- Grasses may reduce soil N on vigorous sites.
- Cover crops reduce soil moisture in spring so may slightly stress vine, improving fruit quality.

In the foothills, controlling topsoil erosion is key advantage of cover crops.

References

Cover Cropping in Vineyards.

1998. C. Ingels, R. Bugg, et al. UC ANR Publication 3338.

Cover crops for California Agriculture. 1989. P.R. Miller et al. UC ANR Publication 21471.

Managing Cover Crops Profitably. 1998. Sustainable Agriculture Network. Beltsville, Maryland.

UC SAREP Covercrop Resource page. <http://www.sarep.ucdavis.edu/ccrop/>



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Cover Crop Species	Nitrogen Source	Reduces vigor, uses N	Organic Matter	Erosion Control	Weed Control	Natural Enemies	Quick Growth	Loosens Soil	Height	Type	Hardy thru USDA Zone
Legumes											
Berseem Clover <i>Trifolium alexandrinum</i>	4	3	3	3	4	2	4	3	2'	WA	8
Crimson Clover <i>Trifolium incarnatum</i>	3	2	3	3	3	3	1	2	12-20"	WA, SA	7
Subterranean Clover <i>Trifolium subterraneum</i>	4	1	3	3	4	3	2	2	6-15"	CSA	7
Strawberry Clover <i>Trifolium fragiferum</i>	4	1	2	4	3	2	2	2	8-12"	P	7
White Clover <i>Trifolium repens</i>	4	1	2	3	3	2	1	3	8-12"	P, WA	4
Medics <i>Medicago spp.</i>	2	1	2	2	3	1	4	1	12-18"	SA	4-7
Austrian Winter Pea <i>Pisum sativum ssp. arvense</i>	4	1	3	3	2	3	3	3	3'	WA	7
Miranda Pea <i>Pisum sativum 'Miranda'</i>	4	1	2	3	2	3	4	3	3'	WA	7
Woolypod Vetch <i>Vicia villosa ssp. dasycarpa 'Lana'</i>	4	2	4	2	4	3	3	3	18-24 "	CSA	7
Bell Bean <i>Vicia faba</i>	3	1	4	2	2	4	3	3	8'	WA, SA	8
Grasses											
Barley <i>Hordeum vulgare</i>		3	3	4	3	2	3	3	24-36"	WA	7
Blando Brome <i>Bromus mollis</i>		2	2	4	3	2	3	3	2'	CSA	6
Foxtail (Zorro) Fescue <i>Vulpia myuros var. myuros</i>		3	2	4	3	0	4	4	12-24"	WA	7
Oats <i>Avena sativa 'Cayuse'</i>		3	2	3	4	0	4	3	5'	CSA	8
Perennial Ryegrass <i>Lolium perenne</i>		2	3	3	3	1	2	4	3-4'	P	7
Annual Ryegrass <i>Lolium multiflorum</i>		3	4	4	3	1	3	4	36-48"	WA	6
Rye <i>Secale cereale</i>		4	4	4	4	1	4	4	36-72"	CSA	3
Triticale <i>Triticum x Secale</i>		3	3	4	3	1	3	3	24-60"	WA	7
Winter Wheat <i>Triticum aestivum</i>		3	3	3	3	1	2	3	24-40"	WA	4
White Mustard <i>Brassica hirta</i>		3	4	3	3	4	3	4	4'	WA	7

0: Poor, 1: Fair, 2: Good, 3: Very Good, 4: Excellent. CSA: Cool Season Annual, WA: Winter Annual SA: Summer Annual, P: Perennial