

SOIL SURFACE MANAGEMENT

HAVE I DEVELOPED A SOIL SURFACE MANAGEMENT PLAN?

CHECKLIST OF QUESTIONS TO ANSWER:

1. What purpose or purposes do I want my soil surface management plan to serve?

- Decrease weed pressure?
- Increase soil moisture utilization?
- Decrease soil wind and water erosion?
- Modify the meso or microclimate?
- Reduce potential for soil surface sealing?
- Increase organic matter in soil?
- Increase beneficial arthropods?

2. What is my cover crop goal or goals?

- To protect the soil?
- To provide a nutrient source for my vineyard?
- To manage pest (insect) populations?

3. What choices in soil surface protection (ground cover) do I have?

- Cover crops (most commonly used approach)
- Composts
- Geotextile fabrics
- Mulches (straw, bark, plastic, etc.)

4. Why should I consider planting cover crops in my vineyard?

- **EROSION CONTROL:** Cover crops reduce soil erosion potential from both wind and water. Serious soil losses can occur from bare soil. Your ability to operate equipment in the field can be impacted from bare wet soil that immobilizes equipment; equipment slippage occurs more easily on bare, compacted soil or bare soil with steep slopes. Dust, which can also be a problem from bare soil, can lead to mite flare ups.
- **ORGANIC MATTER:** Long term use of cover crops will increase soil organic matter content which leads to improvements in important soil qualities such as water holding capacity, water infiltration, soil structure, and nutrient holding capacity.
- **MOISTURE:** Cover crops can utilize excess soil moisture, thus decreasing the amount available to vines.
- **BIODIVERSITY:** Choice of cover crop material influences biodiversity of non-plant species and can be a tool to manage both beneficial and harmful pests (e.g., insects, rodents, virus vectors).

5. What factors should I consider in making cover crop decisions?

- Match your cover crop to your soil and climatic conditions.
- Proper cover crop management typically requires irrigation; cover crop needs should be considered in irrigation system planning and vice versa. (See Water Management Riskbuster.)
- Nutrient management needs for the cover crop should be monitored.
- Mowing may be needed for weed control; mow above the cover crop. Mowing may also be needed to reduce frost damage potential.
- Different cover crop choices have different seedbed preparation requirements.
- Your choice of cover crops, especially broadleaf species, can limit your herbicide choices.
- Different cover crop materials have different potential for harboring beneficial pests.
- Consideration for supplemental irrigation, such as sprinkler hand lines, should be made in vineyards where cover crops will be planted that won't directly receive irrigation water to help establish the cover crop.



6. What are the potential risks in using cover crops?

- Choice of cover crop can modify your mesoclimate and may increase the risk of frost damage.
- Cover crops may compete with vines for nutrient and water resources. (Competition can be both desirable and undesirable.)
- Cover crop choice may limit herbicide choices.
- There can be an increase in nitrogen in the vineyard system due to cover crops.
- Different cover crop materials have different potential for harboring harmful pests.
- Stand establishment timing needs may conflict with other vineyard activities, such as harvest.
- Depending on your cover crop choice, there may be issues with seed. Determine the availability of the material you have chosen as well as the quality; poor quality seed that is cracked or has impurities may result in poor stands or infestation with noxious weeds.

Comparisons between irrigated and non-irrigated cover crops

	Irrigated	Non-irrigated
Cover crop choices	Broad, based on how much you're willing to manage	Limited, based on what can grow
Nutrient potential	High if using a legume	Low
Soil surface protection	High	Low, but better than bare soil
Weed pressure impact	Reduced weed pressure	Somewhat reduced
Water management	Useful in chlorotic areas of juice grapes to reduce wet soils	Can be used as a canopy management tool in high rainfall areas
Seeding	Seeding date not as critical if irrigation can be used during establishment	Seeding date prior to fall moisture is critical; supplemental irrigation, such as hand lines, should be considered during establishment
Other risks	May increase potential for low temperature damage May increase rodent populations	



CHECKLIST: BUILDING YOUR SOIL SURFACE MANAGEMENT TOOLBOX

- What is my soil surface management goal?
- Have I determined my soil surface management choice?
- If I have chosen a cover crop:
 - Have I considered the potential risks and management needs of growing a cover crop?
 - Is my cover crop choice an annual or perennial species?
 - Have I considered the differences in management needs for my cover crop versus my vineyard?
 - Is my cover crop a nutrient (e.g., nitrogen) source?
- Have I evaluated my cover crop establishment to determine if I am meeting my soil surface management goal?

RESOURCES

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