Mulch in vineyards

Mardi Longbottom
helpdesk@awri.com.au

@The_AWRI
The AWRI
Traditional undervine management
Traditional undervine management
Traditional undervine management
Traditional undervine management
<table>
<thead>
<tr>
<th><strong>Advantages</strong></th>
<th><strong>Disadvantages</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>low cost</td>
<td>poor infiltration</td>
</tr>
<tr>
<td>no competition</td>
<td>uneven water distribution</td>
</tr>
<tr>
<td>tidy</td>
<td>low soil biota</td>
</tr>
<tr>
<td>easy to manage</td>
<td>high solar radiation and reflection</td>
</tr>
<tr>
<td>high solar reflection and heat to protect against frost</td>
<td></td>
</tr>
</tbody>
</table>
A fit for purpose soil will:

- Suppress disease-causing and pest organisms
- Encourage good soil structure, improving water infiltration, oxygen diffusion, and water-holding capacity.
- Improve nutrient availability for plant growth
- Retain N, P, K, S and Fe
- Decompose plant residues rapidly
Mulch – impacts on soil

Direct
- soil moisture
- nutrient content (?)
- radiation interception

Indirect
- temperature
- soil biota
Mulch = a layer of material spread on the soil to protect the surface, reduce weeds and provide nutrients for the soil (??)

Compost = Organic residues that have been ‘stabilised’ by biological decomposition
Mulch types

The Australian Wine Research Institute

Mardi L. Longbottom
Mulch types

Mardi L. Longbottom
Mulch for vineyards

Mulch for use in a vineyard use should be:

• Relatively inert
• Of an appropriate particle size to provide aeration and surface protection to conserve water.
Mulch

Advantages
- Water savings
- weed suppressant
- improved/even infiltration
- ↑ soil biota
- ↓ solar radiation and reflection

Disadvantages
- cost
- pests (earwigs, rodents, snails)
- frost
- fire
- other management e.g. harvest
Mulch costs

- Highly variable (product, availability, transport) (e.g. Straw)
- Application – special equipment?
Compost

Organic residues that have been ‘stabilised’ by biological decomposition
Compost - advantages

- Waste stream utilisation
- Slow release of nitrogen, extending nitrogen availability and reduced leaching.
- Medium to high level of P, K, Mg and Ca
- C:N ratio → More efficient nutrient utilisation
- Nutrient analyses
- A good source of bacteria and micro flora, stimulates worm activity. Mature compost is usually pH neutral
- Organic matter improves physical soil characteristics
- Increased soil moisture retention
- Reduced reliance on herbicides
Compost sources

- Garden wastes collected by local councils
- Wineries
- Feedlots
Grape marc

Uncomposted grape skins, seeds and stems

- Must neutralise pH
- C:N optimised with partial breakdown

Problems:
- burning or death of young vines
- fungal and odour problems
- contribute to groundwater pollution if inappropriately stored
cow manure  chicken waste
Compost - costs

- Cost \(\sim \$30/m^3\)
- specialised application equipment