1-1-1965

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Recommended Citation
Harvey, H L. (1965) "Black spot and powdery mildew of grapes," Journal of the Department of Agriculture, Western Australia, Series 4: Vol. 6 : No. 9 , Article 3.
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BLACK SPOT AND POWDERY MILDEW OF GRAPES

By H. L. HARVEY, B.Sc.(Agric.), Officer in Charge, Plant Pathology Branch

BLACK spot (or anthracnose) and powdery mildew (or oidium) are diseases that occur commonly on grape vines in W.A.

Whereas Black spot in commercial vineyards has now been almost eliminated by the use of efficient control measures it is still a serious disease in home gardens. Oidium on the other hand is often damaging in both commercial and home garden vines. Both diseases cause a reduction in yield and quality of grapes.

Black Spot

Black spot is caused by the fungus *Elsinoe ampelina*, which may attack any part of the current season’s growth. On leaves and berries the dark-coloured spots develop greyish centres as they enlarge, and the margins become dark red or purplish black in colour. On canes, the

Black spot infection on leaf showing characteristic cracking of dead tissue and the subsequent development of holes in the leaf

Black spot infection of berries. Note the light coloured centres and the darker marginal areas
As a result of infection, girdling of canes, leaf stalks, bunch stalks, and berry stalks commonly occurs, leading to the death of distal parts beyond the spots or cankers.

The fungus largely survives from season to season in cankers on canes not removed during pruning operations. Affected tendrils left clinging to the trellis wires are also a common means of carry-over. With the advent of spring, the fungus in these cankers or spots becomes active once more, and produces myriads of minute spores which are disseminated by rain splash or heavy dews. When the spores lodge on the new spring growth, infection occurs, giving rise to the symptoms mentioned.

**Powdery Mildew**

Powdery mildew is caused by the fungus *Uncinula necator (Oidium tuckeri)* which spreads rapidly during showery or overcast weather when conditions are cooler than normal in summer. Fortunately, in our commercial vineyards, this combination of weather conditions occurs only infrequently and consequently the occurrence of powdery mildew in severe form is correspondingly infrequent.
# SPRAY SCHEDULE

<table>
<thead>
<tr>
<th></th>
<th>Black Spot</th>
<th>Powdery Mildew</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bud Swell</td>
<td>Spray Ziram or Thiram</td>
<td></td>
</tr>
<tr>
<td>Shoots 2 in.—4 in. long</td>
<td>As above</td>
<td>Spray sulphur (not lime-sulphur)</td>
</tr>
<tr>
<td>Three weeks later</td>
<td>As above</td>
<td>As above</td>
</tr>
<tr>
<td>After fruit set</td>
<td>As above</td>
<td>As above</td>
</tr>
<tr>
<td>Subsequently as required</td>
<td></td>
<td>Apply dusting sulphur at 5 to 10 lb. per acre at 10 day intervals during overcast weather</td>
</tr>
</tbody>
</table>

**NOTE**

- Use sprays according to manufacturers' recommendations.
- Of the sprays for powdery mildew control, sulphur is the most efficient. "Karathane" and "Phaltan" have been used as alternatives but are not recommended unless sulphur sprays are not available.
- Commercial names of fungicides:
  - Thiram is sold as "Thiram 80", "Thiotox", "Lantox".
  - Ziram is sold as "Ziram 80", "Zitox 80".
  - Spraying sulphur is sold as "Microsulphur", "Cosan", "Micromill", "Microtomic", "Kumulus".

Cankering of canes caused by infection with Black spot

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On the other hand it occurs more frequently in home gardens where sheltered conditions and rank growth increase the powdery mildew risk. This is the result of the practice in many cases, of encouraging extensive foliage growth on trellises or pergolas for shade purposes.

In the early stages of infection, small light green to yellow spots may appear on the leaves. Later the disease becomes conspicuous as a dirty white powdery growth on all green parts including leaves, shoots and fruit. The mildew may be rubbed off easily and beneath it on the affected part, a dark mark with a web-like pattern may be seen. Second-year canes often show these dark patches as a result of infection during the previous year. Fruit that is blemished in this way is unattractive on the local market and unacceptable for export. Furthermore, affected fruit may split and thus be rendered useless. "Shelling" or the drying up of the pulp may also follow cracking and is especially damaging in dried vine fruits such as currants.

Control

Both black spot and powdery mildew are difficult to check when once established on the vines. Control measures are aimed at protecting the developing foliage, canes and branches from fungal attack. Suitable fungicides should be applied as a routine practice each year, commencing at the bud swelling stage in the spring.

The schedules in the table on page 519 can be used for single or dual control of these diseases.
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