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### Peach leaf curl

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*Department of Agriculture*

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# PLANT DISEASES

## ENTYLOMA LEAF SPOT OF ENGLISH MARIGOLD

By R. F. DOEPEL, B.Sc. (Agric.), Plant Pathologist

**T**HE English marigold or calendula is a hardy ornamental which is widely grown in gardens throughout Western Australia. With the exception of eelworm attack on the roots it is seldom troubled by diseases and this feature has no doubt contributed to its popularity.

However, a new disease (caused by the fungus *Entyloma calendulae*) was recorded last year from a number of localities in W.A., including Perth, Forrestfield and Bindoon and may prove to be rather serious.

### SYMPTOMS

Affected leaves develop pale yellow spots which increase in size up to one quarter of an inch in diameter. Such spots later become dark grey in appearance as the disease progresses on the plant. (See illustration overleaf.)

The older leaves are the first to be attacked and during wet weather, which favours the disease, are often completely destroyed. As the season progresses infection spreads to the younger leaves also and the plants become very ragged in appearance and

produce inferior blooms. With the advent of warm weather however, good recovery may be made.

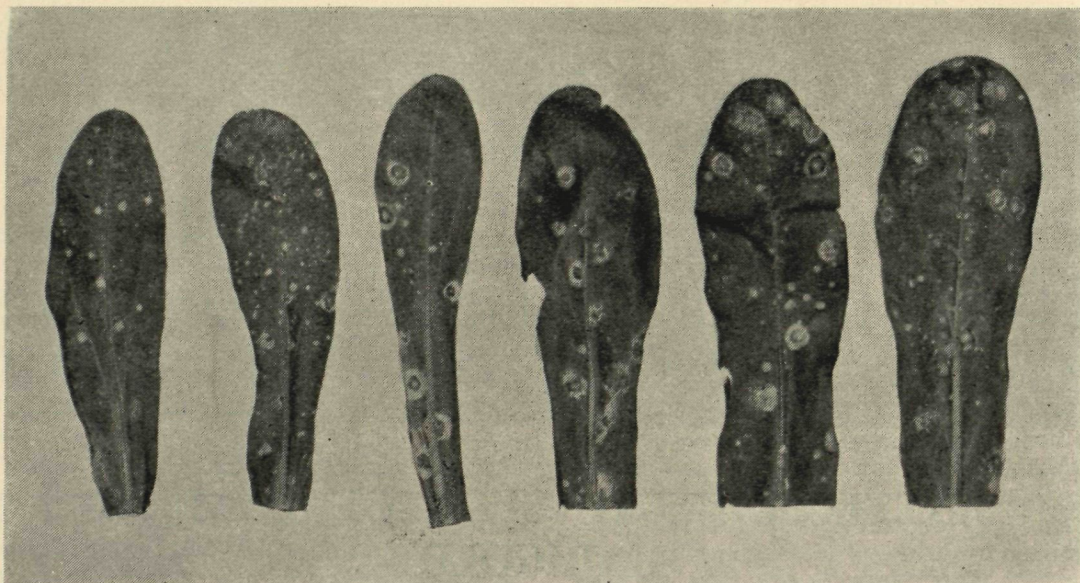
### CONTROL MEASURES

1. Adopt a rotation so that marigolds are grown in different sites in the garden each year.

2. As soon as the disease is noticed apply a copper-containing spray and repeat at weekly intervals if found necessary. Copper oxychloride sprays such as Cuprox, Soltosan, etc. are convenient to use and are often preferred in the home garden. They can be obtained from leading seedsmen and florists and should be used at strengths indicated by the makers.

3. At the end of the season all diseased plants and fallen leaves should be collected from the garden and burnt.





English marigold (*Calendula*) leaves showing typical symptoms of the *Entyloma* leaf spot disease.

## HORMONE WEEDICIDE INJURY TO GRAPE VINES

### *Warning to Growers*

By W. P. CASS SMITH, B.Sc. (Agric.), Government Plant Pathologist

During the present season, serious injury to grape vines from 2,4-D and 2,4,5-T, proprietary weedicides, has been noticed on two occasions. In each case the damage, which included killing of vines outright, was brought about by spraying weeds between the rows or on headlands.

The object of this note is to warn growers of the serious consequences which indiscriminate use of hormone weedicides may cause, and acquaint them with the more prominent symptoms noticed. (See illustrations.)

Wind transported spray particles, or volatile spray constituents, may cause damage not only at the place of application but also at considerable distances from the source. In addition the complete cleansing of spray outfits from hormone weedicides is difficult to achieve and injury may thus be caused by residues in the tank.

Before using hormone weedicides therefore, growers are strongly recommended to obtain advice from the Chief Weeds Control Officer regarding suitable materials and precautions to be observed.





#### SYMPTOMS OF HORMONE WEEDICIDE INJURY ON GRAPE VINES

Figs. 1 and 2.—Currant foliage from Bindoon, November, 1951, showing symptoms caused by a 2,4-D preparation applied for weed control during dormant period. Note for comparison healthy leaf at bottom of Fig. 2.

Fig. 3.—Wortley Hall and Ladies Finger canes from a West Midland garden, showing prominent multiple-bud galls and splitting of bark. Injury caused by 2,4,5-T.

Fig. 4.—White Chasselas fruit stalks from West Swan, March, 1952, showing damage caused by 2,4,5-T applied for weed control probably during the early growing season. Note gross thickening and cankering of fruit stalks and withering of berries. Leaf symptoms similar to those in Figs. 1 and 2 were also noticed.



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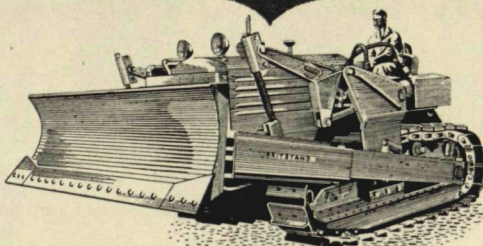
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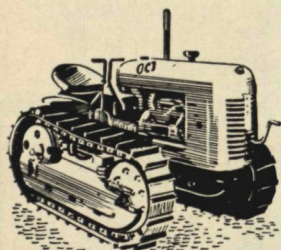
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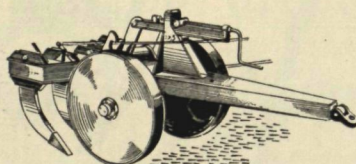
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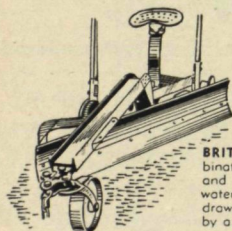
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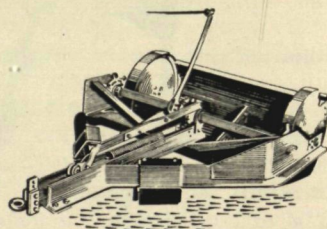


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# LATE OR IRISH BLIGHT OF POTATOES

By W. P. CASS SMITH, B.Sc. (Agric.), Govt. Plant Pathologist

**L**ATE or Irish Blight, caused by the fungus *Phytophthora infestans*, is the most destructive disease of potatoes in many countries. Fortunately it has proved to be uncommon in the main potato areas of Western Australia as suitable weather for its epidemic development seldom occurs for sufficiently long periods. The disease is encouraged by periods of warm muggy weather during the day, followed by relatively cool night temperatures.

Fig. 1.—Potato leaf showing symptoms of Irish Blight. (After Kirk)

In the past, serious outbreaks have occurred mainly in districts adjacent to Perth, during the period August to mid-November.

Growers, especially those in these disease-labile areas, should keep a close watch at the time stated and apply protective sprays immediately Irish Blight is noticed, for in the absence of any spray treatment the crop may be completely ruined within a day or two.

The most obvious symptoms develop on the leaves in the form of blackish water-soaked areas which usually commence near the margins and rapidly work inwards (Fig. 1). Similar lesions may also develop on leaf stalks and stems.

The disease can be readily controlled by spraying with copper fungicides (Fig. 2). Either Bordeaux Mixture (copper sulphate, 4lb.; quicklime, 4lb.; or hydrated lime, 6lb.; water, 40gals); or Burgundy Mixture (copper sulphate, 4lb.; washing soda, 5lb.; water, 40gals.) are suitable.





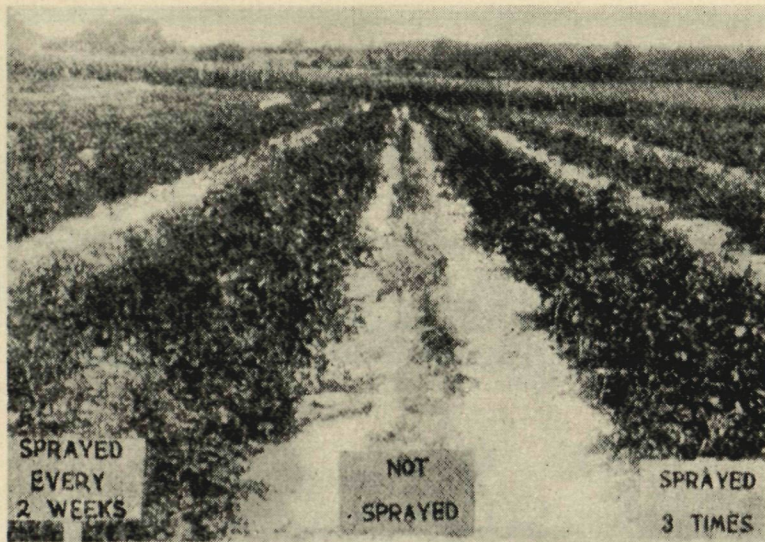


Fig. 2.—Showing effect of Bordeaux mixture in preventing attack by Irish Blight. Plants on left and right sprayed with Bordeaux mixture those in centre not sprayed.

The action of the spray is protective, not curative and hence the first application must be given immediately the disease appears in view of its capacity for rapid spread. Application should be repeated frequently, during weather conducive to its development, in order to keep the new growth covered with spray.

Leaflet No. 915 gives fuller information on this subject and is available free from this Department.

## PEACH LEAF CURL

**P**EACH leaf curl caused by the fungus *Taphrina deformans* is a very common disease in this State during the spring and early summer. In addition to attacking both edible and flowering peaches, the fungus also attacks nectarines, almonds and apricots. When preventive measures are neglected the disease may be anticipated yearly commencing in spring.

Leaf Curl infection is most obvious on the leaves which become enlarged, thickened, blistered and greatly distorted. The whole of a leaf may be affected but generally only portions are attacked (Fig. 3).

The curled portions are at first green, then yellow, whitish, or yellow with a pink tinge and may become a deep red. A whitish bloom covers the surface. Finally, the affected leaves turn brown,

die and fall. In this State no further infection usually occurs, new leaves are produced, and by Christmas the trees appear quite normal.

Shoot and fruit infection may also occur but is less common than leaf infection. Shoots become stunted, curved and more or less distorted when affected with disease, and the terminal bud generally dies. Fruit infection with us is noted more frequently on nectarines



than peaches and shows as red, irregular blistered areas which give the appearance of early ripening.

### Control of Peach Leaf Curl.

Fortunately Leaf Curl is easily controlled. In fact it responds to treatment more readily than any other important disease of fruit trees. One spraying with lime-sulphur (1-10) or Bordeaux mixture (6-4-50) at any time during the dormant period is effective. When San Jose scale is present in the orchard, spraying with lime-sulphur (1-7) when the buds begin to swell is necessary. This will also control Leaf Curl without the use of a true dormant spray.

If for any reason preventive spraying is not carried out, and the leaves of peach, nectarine, almond or apricot trees actually become infected, little can be done, in this State, until the next season, with safety, as the foliage and fruits of "stone fruits" are very subject to injury by spray mixtures, except at very dilute concentra-

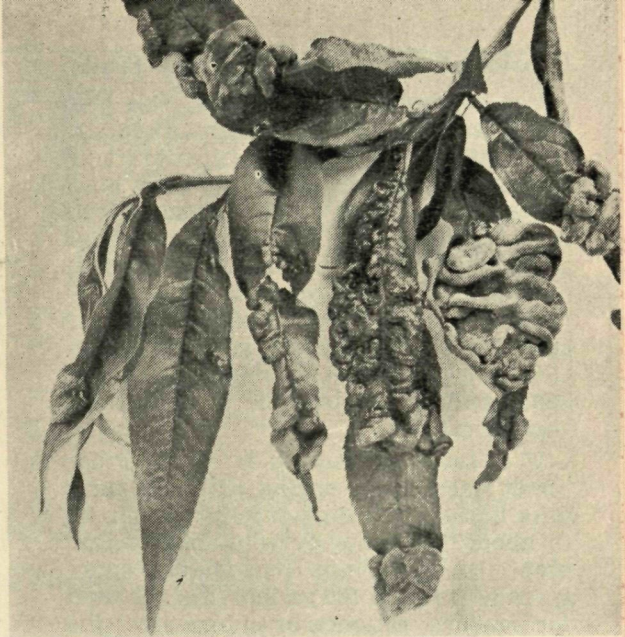


Fig. 3.—Peach leaves affected with Leaf Curl disease.

tions, during the summer months. Usually, however, Leaf Curl disappears as the weather becomes hotter and drier towards Christmas and does not re-appear till the following spring.

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## SHOT HOLE OF STONE FRUITS

**"SHOT HOLE"** of stone fruits caused by the fungus *Clasterposporium carpophilum* occurs yearly and is more difficult to control than Leaf Curl. It is often particularly damaging on early almonds, peaches, plums and apricots which come into growth in late winter or early spring while the weather is still cold and wet.

The disease causes destruction of blossom buds, cankering of shoots, die-back and gumming of twigs, and warty, scabby, russeted or fissured areas on the fruits, which are often dwarfed and malformed. Invaded areas in the leaves often become brittle and fall away leav-

ing the familiar leaf perforations from which the disease takes its name.

Under our conditions, early peaches are usually attacked most severely on leaves and shoots, whereas early apricots are mainly affected on buds, leaves and fruits.



## Control of "Shot Hole" of Stone Fruits

For controlling "Shot Hole" the best treatment is to delay the dormant spraying until the first buds are just starting to move in the spring ("early pink bud" stage). Then spray very thoroughly with Bordeaux (6-4-50) to every 50 gallons of which has been added  $\frac{1}{2}$  lb. of calcium caseinate as a spreader. This treatment is also effective for Leaf Curl. Later sprays with copper and sulphur fungicides are prone to cause damage in this State and should only be used at weak concentrations.

If a second spraying is required for "Shot Hole" in the spring, after the early pink bud stage, "lime-sulphur" one part to about 100 parts by volume of water, plus 1 lb. calcium caseinate spray spreader to each 100 gallons, may be used for peaches, almonds or plums, after the fruit is set, provided the weather is still cool, or Bordeaux mixture 2-3-50 plus caseinate spreader as above, for apricots.

Apricots should never be sprayed with lime-sulphur when in leaf, nor should peaches, almonds or plums be sprayed with Bordeaux mixture after the "early pink bud" stage (except just before the dormant period), or considerable dropping of leaves and fruit may result.

Recently however, new fungicides have become available, which are said to be safe for cover-spraying of stone fruits, and experiments are being conducted to test them for the control of Shot Hole. Growers who are interested in this matter may obtain further particulars from the Department of Agriculture.

In addition to the spraying with 6-4-50 Bordeaux mixture plus spreader at the "early pink bud" stage already referred to, it is an advantage in controlling "Shot Hole" to spray each year just before the leaves normally fall away in the autumn, using Bordeaux mixture of the same strength, 6-4-50.

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