



Department of
Primary Industries and
Regional Development

Journal of the Department of Agriculture, Western Australia, Series 3

Volume 5
Number 2 March- April, 1956

Article 12

3-1956

Plant diseases - Downy mildew of onions - Results of further spray trial

R. F. Doepel

Follow this and additional works at: https://library.dpird.wa.gov.au/journal_agriculture3

Recommended Citation

Doepel, R. F. (1956) "Plant diseases - Downy mildew of onions - Results of further spray trial," *Journal of the Department of Agriculture, Western Australia, Series 3*: Vol. 5: No. 2, Article 12.

Available at: https://library.dpird.wa.gov.au/journal_agriculture3/vol5/iss2/12

This article is brought to you for free and open access by the Agriculture at Digital Library. It has been accepted for inclusion in Journal of the Department of Agriculture, Western Australia, Series 3 by an authorized administrator of Digital Library. For more information, please contact library@dpird.wa.gov.au.

PLANT DISEASES

DOWNY MILDEW OF ONIONS

Results of Further Spray Trial

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

FURTHER spray experiments conducted this season have confirmed the value of zineb fungicides for controlling the serious downy mildew disease of onions. In these experiments plants sprayed with zineb yielded 20% more marketable onions than unsprayed plants and the disease was also greatly reduced in seed crops.

Although downy mildew develops each year in spring and early summer onion crops and causes considerable losses, growers have seldom applied fungicidal sprays as a routine measure. Where sprays have been applied, lime sulphur-resin soap has been the most widely used material.

In preliminary tests conducted on a summer crop at Spearwood during the 1954 season, the organic fungicide zineb proved superior to a number of spray materials, including lime sulphur-resin soap, for mildew control.*

SYMPTOMS AND EFFECTS

Leaves affected with mildew turn yellowish green and wither back from the tips (Fig. 1). The disease is most noticeable on the older leaves but the younger leaves are also attacked as they develop. The fungus can often be seen as a grey-violet downy covering on the leaves in the early morning after rain or dew (Fig. 2). If leaf damage is severe, bulb development is retarded and yields are lowered.

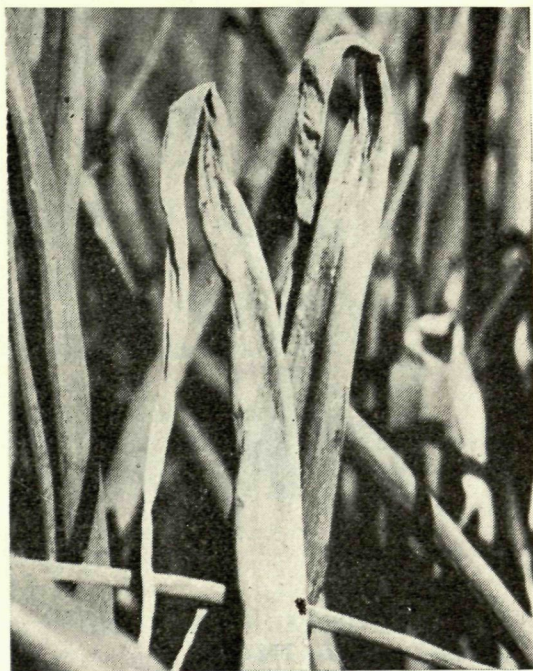


Fig. 1.—Onion plants in an experimental plot at Spearwood showing leaves attacked by mildew. Affected leaves turn greenish yellow, hang down limply and wither back from the tips.

* Refer.—Journal Dept. of Agric., West Aust., Vol. 4 (Third Series) No. 3, pp. 313-318.

Seedstalks are also attacked by mildew (Fig. 3) and commonly bend over or break at the site of infection (Fig. 4). As a result, seed quality and yields are greatly reduced.

TESTING OF SPRAYS, 1955

Further experiments were conducted this season on both field crops and onions grown for seed. Zineb and copper oxychloride were the only fungicides tested, each material being used with and without Triton B 1956, an additional wetting and spreading agent.

block design with eight replications of each treatment. The plots were two beds in width (four rows of plants per bed), and 12 links in length. Unsprayed strips of onions were left between the plots to encourage mildew development.

Spray strengths of the fungicides and spreader used were as follows:—

Material.	Strength (in 100 gallons water).	
	lb.	
Copper oxychloride	3½
Zineb	1½
Triton B1956	6 fluid oz.

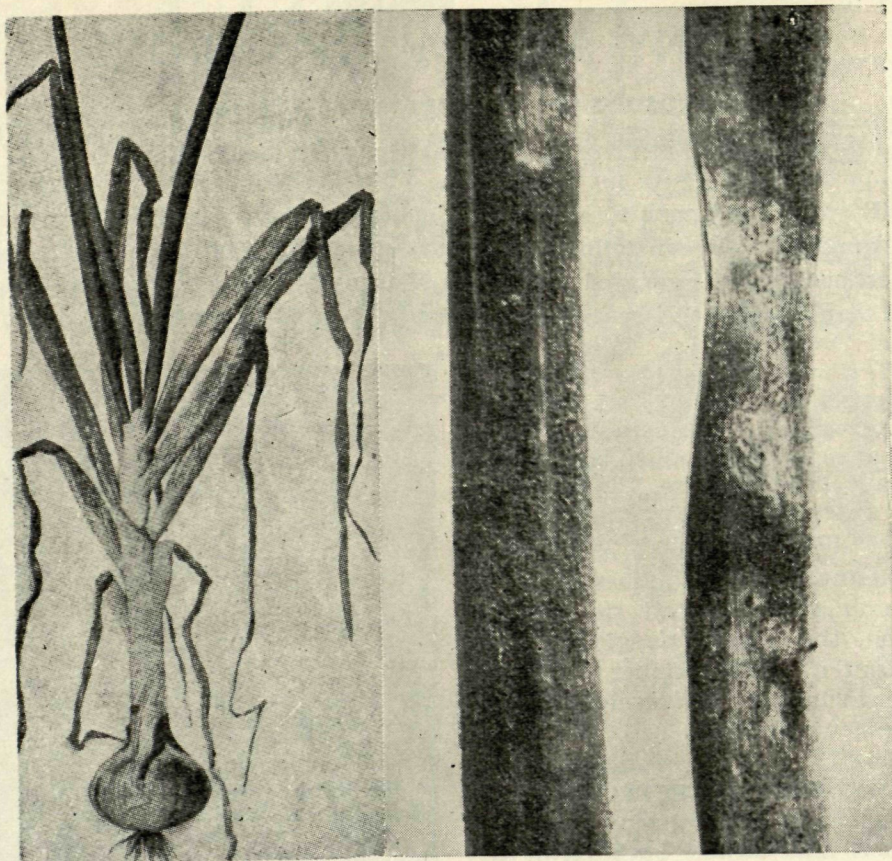


Fig. 2.—On left, typical appearance of onion plant badly affected with downy mildew. (After Walker.) On right, portions of onion leaves showing the furry growth of mildew which is most noticeable in the early morning after rain or heavy dew.

EXPERIMENTAL DESIGN AND TREATMENTS

Field Crop.—Eight beds of onions were selected from a very uniform stand in a late July planting in the Spearwood district. The experiment was of a random

Commencing on September 13, five spray applications were made with a knapsack sprayer to be the experimental plots at 10 to 14 day intervals. The control plots were left unsprayed as a check on the performance of the fungicides.

SHELL

HORTICULTURAL AND AGRICULTURAL PRODUCTS

Many years of highly scientific study and research both in the laboratory and in the field, have gone into perfecting the range of Shell Horticultural and Agricultural products which today are recognised all over Australia as the standard of quality, each for its particular job

SHELL WHITESPRAY
SHELL SUPERIOR DORMANT OIL
SHELL PALESPRAY
SHELL REDSPRAY
SHELLICIDE "D"
SHELL UNIVERSAL D.N.C. WINTERSPRAY
SHELL APHIS SPRAY
SHELL D.D.T. EMULSION 25%
SHELL THIRAM 80
SHELL SOIL FUMIGANT EDB (15)
SHELLSTONE
SHELLSTONE "Q"
GRAFTING MASTIC "H"
GRAFTING MASTIC "L"
COLGRAFT
SHELL T.D.E. EMULSION 20%
SHELL ZIRAM 50
SHELLAMITE 50

SHELL WEED KILLER-TYPES 'D,' 'M,' 'E,' 'B,' 'G,' 'Q.'

Shell Spraying Oils available in 1-gallon tins, 4-gallon tins or drums and 44-gallon drums.

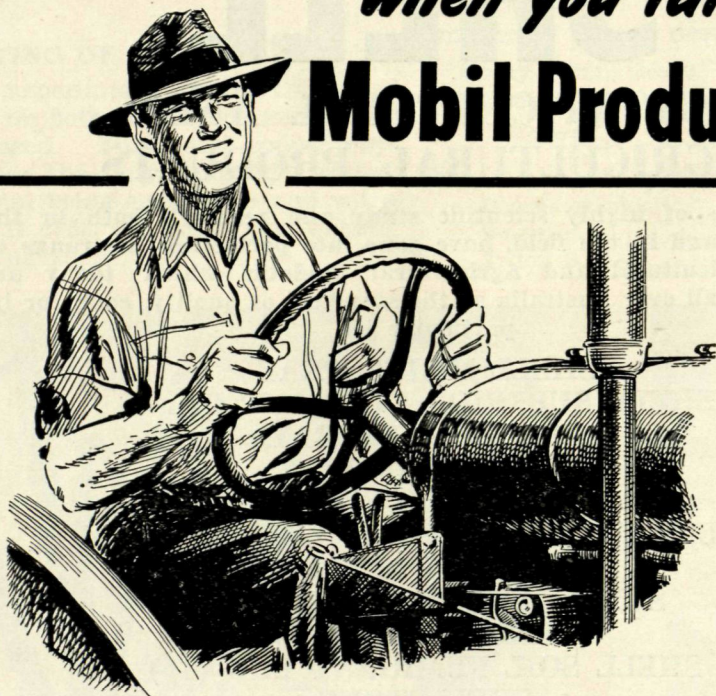
Grafting Mastics all available in 1 and 5 lb. tins.

All products are obtainable from Shell Chemical (Aust.) Pty. Ltd. agents, and from Fruitgrowers' and Agricultural Organisations throughout the country.



Shell Chemical (Australia) Pty. Ltd. (Inc. in Victoria)
Melbourne - Sydney - Brisbane - Perth - Adelaide - Hobart

*"You're talking my language
when you talk -*
Mobil Products"



"... the more I use Mobil Products, the more convinced I become of their outstanding quality and down right value for money . . . "

You, too, will experience the same satisfaction when you change to Mobil Products. Mobiloil in your tractor, truck or car means complete protection at all speeds, temperatures and conditions - a cleaner,

livelier engine, too. Then there's Mobil Power Kerosene and Mobil Distillate, quality Mobil fuels for ignition type and diesel tractors respectively. Mobil Distillate is unsurpassed for all automotive diesel engines. All Mobil Products are available at Vacuum Depots & Agents. VACUUM OIL CO. PTY. LTD.



Mobil } OIL
POWER KEROSENE
DISTILLATE
AGRICULTURAL OILS

MP 492

Seed Crop.—The zineb + Triton spray was also tested on a seed crop of onions at Spearwood. Seven applications were made at 10-14 day intervals. An unsprayed section of the crop was left as a control.

DISEASE DEVELOPMENT

Mildew developed in all experimental plots and caused dying back of the leaves, particularly on the unsprayed plants.

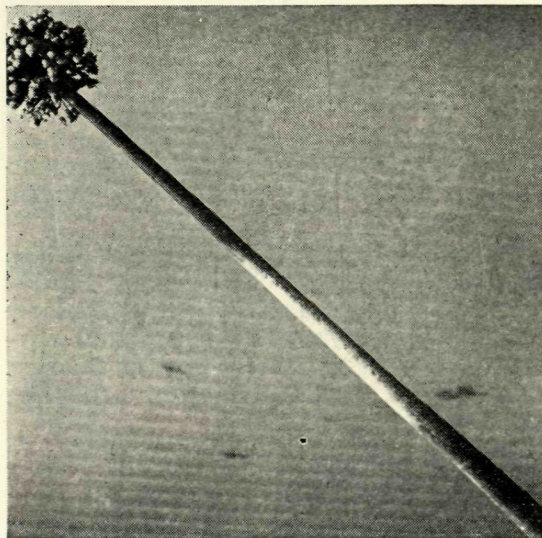


Fig. 3.—Onion seedstalk affected with mildew—early stage. The portion of the stalk showing white has been girdled by the fungus.

Seedstalks were affected by the mildew at a late stage of growth, many of them withering and falling over at the site of attack.

PLOT RECORDS

Field Crop.—An assessment was made a week prior to harvest, of mildew damage to the foliage in each treatment plot. The following table gives the average estimates of leaf tissue killed for each treatment.

<i>Treatment.</i>	<i>% Leaf Tissue killed (Average of 8 plots. 5 plant per plot).</i>
(1) Control—unsprayed	38.75
(2) Copper oxychloride	35.00
(3) Copper oxychloride + Triton	37.88
(4) Zineb	31.00
(5) Zineb + Triton	28.75
Least significant difference 5% level	6.26
Least significant difference 1% level	8.43

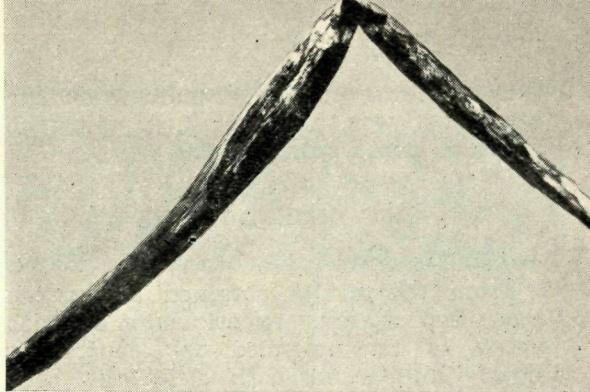


Fig. 4.—Onion seedstalk affected with mildew—late stage. The stalk has withered and bent at the site of attack.

All plots were harvested at maturity on November 23, 1955, and the onions were cured for a week before being topped and weighed. The total yields for the various treatments are listed in the following table:—

<i>Treatment.</i>	<i>Yields of Cured Onions (Average of 8 plots). lb.</i>
(1) Control—unsprayed	43.94
(2) Copper oxychloride	43.63
(3) Copper oxychloride + Triton	43.18
(4) Zineb	53.06
(5) Zineb + Triton	53.38
Least significant difference 0.1% level	5.29

Seed Crop.—Counts were made of healthy and mildew affected plants in the experimental block:—

	<i>No. affected seed-stalks.</i>	<i>Total No. stalks.</i>	<i>% affected.</i>
Unsprayed plot	418	735	56.9
Zineb + Triton plot	51	780	6.5

DISCUSSION

The zineb sprays were the only treatments that significantly reduced leaf damage from mildew and increased yields of marketable onions. Plots sprayed with zineb gave approximate 20 per cent. increases in yields above those of the copper oxychloride and control treatments. Improved coverage of plants was obtained by using Triton spreader with the fungicidal sprays.

Outstanding control of mildew on the seedstalks was also obtained with the zineb + Triton spray.

RECOMMENDATIONS

1. Spraying.

From the results obtained during the past two seasons experiments a zineb spray is recommended for controlling downy mildew on both field and seed crops of onions. The fungicide should be used at a strength of $1\frac{1}{2}$ lb. in 100 gallons water. To obtain good coverage, an efficient wetting and spreading agent, such as Triton B1956 or Agral LN, should be added to the spray at the rate of 4 to 6 fluid ounces in 100 gallons spray.

The first sprays should be applied before mildew develops and then at 10 to 14 day intervals during the season.

Zineb is marketed under such trade names as Dithane Z-78, Zebtox, Zineb 65, etc., and can be obtained from leading seedsmen and stock firms.

2. Sanitation.

As crop remains may serve to carry over the mildew fungus from season to season, all dead leaves and discarded bulbs should be burnt after harvesting has been completed.

3. Rotation.

Onions should not be grown more frequently than once every three years on the same land. This will help prevent infection of seedlings, field and seed crops from diseased refuse in the soil.

ACKNOWLEDGMENTS

Grateful appreciation is expressed to Messrs. Rudan and Gaspar of Spearwood for making available onion crops for the experiments.

Acknowledgment is also made of the assistance given by Messrs. M. Hardie, T. Wachtel and H. Leitch, of the Vegetable Branch in applying the sprays and harvesting the plots, and by Mr. N. Shorter, of the Horticultural Division for analysing the experimental results.



KANGAROO DESTRUCTION

Although kangaroos are protected in some parts of the State, they are classed as vermin in the pastoral areas where vast numbers are eating out valuable feed needed for sheep.

The Chairman of the Agriculture Protection Board (Mr. G. K. Baron Hay), said that some pastoralists were making strenuous efforts to reduce the numbers of the pests, but still more co-operation was needed to produce worthwhile results.

In the Wiluna area, 600 kangaroos were poisoned on Mt. Keith Station, and at Albion Downs Station 2,200 had been destroyed in three weeks.

In the Meekatharra area where a bonus of 1s. 6d. a head was declared in August, 1954, a total of 10,780 kangaroos have been destroyed to date. Poisons used include, strychnine, arsenic and cyanide and methods recommended are designed to prevent loss of bird life.

A TREE-FELLING TASK FORCE



Nuffield Universal Tractor, equipped with hydraulically operated front-end loader and 6 ft. dozer blade, shown clearing farm land. The tractor illustrated is the Nuffield M4 (kerosene-powered), equipped with 14 x 30 rear and 7.50 x 18 front tyres, on pressed wheels.

This model tractor, costing only £1,074 (Capital City), includes the following standard equipment: Hydraulic lift, 3-point linkage, p.t.o. belt pulley, drawbar, drawbar extension, seat cushion, canvas tractor cover, electric starter and horn, headlight, agricultural rear light, tail and side lights, heat gauge, hour meter, foot plates, chaff screens and radiator shutters.

Other tyre sizes available: 11 x 36R, 6.00 x 19F; 13 x 26R, 6.00 x 16F; 13.50 x 24R, 6.00 x 16F; 11 x 36 Dual Rear, 6.00 x 19F. (Tractor, when fitted with these alternative sizes, varies accordingly in price.)

Tractor & Implement Division, Park Lane Motors Pty. Ltd.
Box C103, G.P.O., Perth.

Please send me literature on the Nuffield Tractor Range and "Approved-After-Test" Matched Implements.

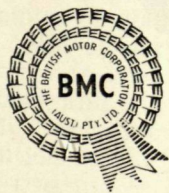
NAME _____

ADDRESS _____

☐ Place X in this square if for school project.

C.8

NUFFIELD (AUST.) PTY. LTD.
A UNIT OF THE BRITISH MOTOR
CORPORATION (AUST.) PTY. LTD.



Distributors in West Australia

PARK LANE MOTORS PTY. LTD.

926-928 Hay Street, PERTH

Sold and Serviced by
Authorised Nuffield
Distributors and
Dealers Everywhere.



Please mention the "Journal of Agriculture, W.A.," when writing to advertisers

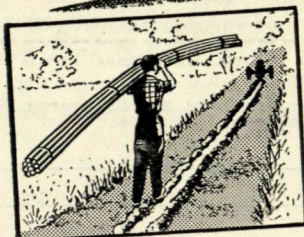
Journal of agriculture Vol. 5 1956

*For everlasting stock water and
irrigation supplies*

DICON *Butyrate*

NON-CORROSIVE PIPING

IS THE ECONOMIC ANSWER!



★ **ECONOMIC**

Light weight means low freight costs.
Crystal clear walls result in constantly
low co-efficient of water friction.
Resistant to termites, rodents and all
corrosion.

★ **EASILY INSTALLED**

One man can easily join a thousand feet
of Di-Con in an hour (in the field). In
20 foot semi-flexible lengths joined by
simple Solvent Welding technique using
low-cost pressure moulded fittings.

★ **EVERLASTING**

Butyrate Piping has been proved in use
in both America and Australia over the
last fifteen years — can now be considered
virtually EVERLASTING. Used exclu-
sively in South Australian Government's
irrigation projects on River Murray settle-
ments.

Compare these prices

	per ft.	1 1/4"	1/11 1/2 d.
3/4"	1/2 1/2 d.	1 1/2"	2/8 d.
1"	1/7 d.	2"	3/10 1/2 d.

All sizes internal diameters.
All prices F.O.R. Australian Capital Cities.

★ **SAFE WORKING PRESSURE**

100 pounds per square inch.

DICON *Butyrate* **PLASTIC PIPING**

Telephone
BA 9711

McPherson's
Ltd.

At Industry's Service Since 1860

532 MURRAY STREET, PERTH.

Please mention the "Journal of Agriculture, W.A.," when writing to advertisers