Title:	Poinsettia: evaluation of phytotoxic effects of fungicides applied to mature plants for the control of powdery mildew diseases
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Project leader:	Dr T M O'Neill, ADAS Arthur Rickwood
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Project co-ordinators:	Mr G Shorland and Mr A Fuller
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The results and conclusions in this report are based on an investigation conducted over one year. The conditions under which the experiment was carried out and the results obtained have been reported with detail and accuracy. However because of the biological nature of the work it must be borne in mind that different circumstances and conditions could produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial product recommendations.

AUTHENTICATION

I declare that this work was done under my supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

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PRACTICAL SECTION FOR GROWERS

Commercial benefits of the project

This project has identified two fungicides with proven efficacy against powdery mildew diseases, that are permitted on protected poinsettia, and which left no visible deposit or caused scorch on mature plants under the test conditions used here. The results will assist growers to select crop-safe fungicide programmes for use on mature poinsettias.

Background and objectives

Powdery mildew diseases of poinsettia are not common in the UK and any outbreak must be reported to the Plant Health Division of DEFRA. At least four different species of powdery mildew have been recorded on poinsettia crops in the UK over the past five years. The most recent outbreaks (in 2001) have been identified as *Oidium* sp. (American powdery mildew) and *Sphaerotheca euphorbiae* (Eurasian powdery mildew). While stringent plant health measures are the best option for the prevention of any further incidences of non-indigenous powdery mildew diseases on poinsettia crops in the UK, growers need to be prepared for any incidental outbreaks in the future. Guidance for the control of outbreaks of powdery mildew diseases on poinsettia are provided by the Plant Health Division of DEFRA. However, growers do need guidance and assurance on the safety to poinsettia crops of the recommended fungicides, in particular if applications are to be made after bract colouration.

This trial set out to examine the crop safety of eight currently approved (as at November 2001) fungicides on two standard cultivars of mature poinsettia plants. The aim was to provide guidance on crop safety and to assist in the development of an anti-resistance strategy for the effective control of powdery mildew diseases of poinsettia.

Summary of results and conclusions

Eight fungicides were each applied three times, at 7-day intervals during November and December 2001, to mature plants of poinsettia, cvs Cortez and Maren, in a randomised split-plot replicated trial. Visible spray deposit and scorch on leaves and bracts were assessed. Marketability was determined 14 days after the final spray. The use of water-sensitive paper confirmed good spray coverage of the upper surface of bracts and leaves was achieved. Amistar, Bavistin DF, Stroby WG and Thiovit left an obvious spray deposit, visible after just one spray. Nimrod-T caused a slight pale brown scorch of leaf and bract tips. Amistar resulted in dark red speckles (c. 0.1 x 1 mm) on bracts of cv. Maren that were visible after the second spray and were obvious after shelf-life storage for 3 weeks. Similar symptoms developed on cv. Cortez, but only after shelf-life storage. Fungaflor and Systhane 20 EW caused little or no visible deposit or damage and therefore appear suitable for use on mature poinsettia in treatments directed at control of powdery mildew diseases should they re-occur.

Action points for growers

1. Fungaflor and Systhane 20 EW were found to be safe to use on mature poinsettia cvs Cortez and Maren, in December at the rates shown below. The safety of these fungicides to young poinsettia plants, and at high temperatures (i.e. in summer), has not been tested.

2. Do not use Amistar, Bavistin DF, Nimrod-T, Stroby WG or Thiovit on mature poinsettia plants, especially after bracts are present, because of the risk of obvious spray deposit or bract damage. Note however that it may be possible to use these fungicides early in the production of poinsettia, when any leaves adversely affected are no longer present or not readily visible at point of sale.

3. Crop damage caused by fungicide sprays may not be visible immediately after treatment. Speckling on bracts caused by Amistar was first noted 7 days after spray two and only became obvious after 14 days in a shelf-life room.

4. Application of sprays at 330 ml/m^2 and 2 Bar pressure using a flat fan nozzle (Lurmark 02F80) resulted in good coverage (70-100% of mid and upper canopy leaves; around 50% of lower canopy leaves) of the upper leaf and bract surfaces.

Powdery mildew fungicides evaluated for safety to poinsettia

Products are arranged in fungicide 'groups'. This means that fungicides with a common mode of action, and a common risk of fungicide resistance, are grouped together.

Products (arranged in fungicide groups)	Active ingredient	Standard spray rate	Comments
1. *Strobilurins (QoI fungicides)*			
Amistar	Azoxystrobin	1 ml/litre	Caused bract damage
Stroby WG	Kresoxim-methyl	0.3 kg/ha	Slight deposit
2. *Sterol Biosysnthesis Inhibitors (SBIs)*			
Fungaflor	Imazalil	0.5 ml/litre	No deposit or damage
Rubigan	Fenarimol	0.18 ml/litre	Further tests needed
Systhane 20EW	Myclobutanil	0.45 ml/litre	No deposit or damage
3. *MBC*			
Bavistin DF	Carbendazim	1.0 g/litre	Heavy deposit
4. *Hydroxy-pyrimidine + MBC*			
Nimrod T	Bupirimate + carbendazim	3.2 ml/litre	Slight leaf & bract scorch
5. *Sulphur*[a]			
Thiovit	Sulphur	2.0 g/litre	Heavy deposit

[a] The crop safety of sulphur applied by vapourisation in a burner was not evaluated in this study

Anticipated practical and financial benefits

Outbreaks of poinsettia powdery mildew have occurred occasionally in the UK since 1996, usually in November or December, a period when bracts are developing and foliar fungicides are not normally applied to the crop. Visible deposits on, or scorch to, leaves and bracts at this time can downgrade or render plants unmarketable. Significant financial losses can result. Based on the work of this project, growers are now better prepared to control poinsettia powdery mildew if the disease re-occurs late in crop production, in the knowledge that late fungicide treatment using the two products identified is unlikely to cause crop damage.

SCIENCE SECTION

Introduction

Until 1995, there was no record of powdery mildew on poinsettia grown in the UK. Since then, at least four species have occurred:

- European powdery mildew (*Leveillula taurica*)
- African powdery mildew (*Leveillula clavata*)
- American powdery mildew (*Oidium* sp.)
- Eurasian powdery mildew (*Sphaerotheca euphorbiae*)

A possible fifth species occurred on a crop in 1996, though there was insufficient material to allow complete identification. Eurasian powdery mildew is known to occur on various wild spurges in the UK; European powdery mildew occasionally occurs on crops of protected peppers. The other two species (African and American) are non-indigenous and subject to Plant Health action if they occur. Of these two species, American powdery mildew appears to pose the greater risk for UK growers. This disease has spread from central America to the USA and has caused significant damage there in commercial crops over the last decade. There have also been reports of outbreaks in continental European countries. The disease was reported to spread rapidly in some crops affected in the UK in autumn 2001.

The appearance of American powdery mildew in the UK has introduced the need to apply foliar fungicide to mature poinsettia plants for the first time. The objective of the work described here is to determine for poinsettia the crop safety, or otherwise, of fungicides with known activity against powdery mildew diseases on other crops.

Materials and methods

The trial was undertaken in a commercial crop of poinsettia at Spalding, Lincolnshire, using two varieties, Cortez (red) and Maren (pink).

The plants were arranged on 6 mobile benches (each 8 m^2), with 16 plants per plot (2 groups of 8, of each of 2 colours). Two adjacent benches comprised a block, with 5 plots per bench. Sprays were applied from directly overhead to the point of run-off at 3,300 l/ha (330 ml/m^2) and 2-bar pressure using an Oxford precision sprayer with a flat fan nozzle (Lurmark 02F80). Water-sensitive indicator paper was used in treatment 2 to assess the spray coverage achieved at three different layers in the crop canopy.

Plants were assessed for damage approximately 7 days after spray dates 1 and 2 and 14 days after the final spray. Symptoms were photographed.

After the final assessment on 17 December, 4 plants were selected at random (2 of each colour) from each treatment. The pots were labelled, and placed in the shelf-life room of PA Moerman Ltd (maintained at 18^0 C, 64% RH and with 1,000 lux illumination), to determine shelf-life.

Treatments	Source of crop rate
1. Untreated	-
2. Water control	-
3. Amistar (250 g/l azoxystrobin) at 1 ml/l	SOLA 1536/00
4. Bavistin DF (50% carbendazim) at 1 g/l	SOLA 0009/99
5. Fungaflor (200 g/l imazalil) at 0.5 ml/l	Label
6. Nimrod-T (62.5 + 62.5 g/l bupirimate + triforine) at 3.2 ml/l	Label
7. Rubigan (120 g/l fenarimol) at 0.18 ml/l*	SOLA 2657/00
8. Stroby WG (50% kresoxim-methyl) at 0.3 kg/ha	Label
9. Systhane 20EW (20.6% myclobutanil) at 0.45 ml/l	SOLA 1881/99
10. Thiovit + Agral (80% sulphur + wetter) at 2 g/l + 0.06 ml/l	SOLA 1717/97

* Erroneously applied at 18 ml/litre

Experimental design and analysis

The trial comprised a randomised block, split-plot design with three replicate blocks. Main plots were fungicide treatments, and variety was the split treatment. There was both an untreated control and a water spray control. Plot size was approximately 1.5 m^2. Each plot contained 16 plants, with 8 plants of each of two colours. The allocation of the 2 colours within each plot was randomised. Results were examined by ANOVA where appropriate and by Friedman's non-parametric test when data were unsuitable for ANOVA.

Assessments and records

Weather
Weather conditions at the times of spraying were noted.

Deposit and scorch
All plants were assessed as follows, at approximately 7 days after sprays 1 and 2, and 14 days after the final spray:

a) Spray deposit on leaves (% area affected)
b) Leaf scorch/discolouration on leaves (% area affected)
c) Spray deposit on bracts (% area affected)
d) Leaf scorch/discolouration on bracts (% area affected)
e) Cyathia discolouration
f) Cyathia distortion/absence

Plant quality
At the final assessment (17 December), all plants were assessed for marketability on a scale agreed with the nursery manager/grower.

1. Reject
2. Acceptable - open market standard
3. Good - market standard
4. Good - supermarket standard
5. Excellent - supermarket standard

Shelf life
Four plants were selected from each treatment (2 of each colour) and placed in the PA Moerman Ltd shelf-life room. Marketability was assessed on 8 January 2002 after 3 weeks.

Spray cover
An assessment was made of % discolouration (speckling) on pieces of water-sensitive paper (approximately 1 cm^2) on the upper surface of top, mid-canopy and lower-canopy leaves, on each of 6 plants in treatment 2 (water only) at each spray application.

Crop diary (weather at spray application)
First sprays applied - 22 November 2001 (applied 13.30-15.00, sunny/cloudy)
First assessment - 27 November
Second sprays applied 29 November (applied 13.30-15.10, cloudy)
Third sprays applied - 6 December (applied 16.00-17.00, after dusk)
Second assessment - 6 December
Third assessment - 17 December
Shelf-life assessment - 8 January 2002

Results and discussion

The effect of foliar fungicide applications on the appearance of poinsettia plants are shown in Tables 1-6. Generally there was little difference in the response of the two varieties and means effects are given here. Detailed results by variety are given in Appendices 1-2. Photographs of damage symptoms are shown in Appendix 3. Rubigan was applied in error at 100 x the recommended rate and as a consequence no proper evaluation of this treatment was possible. Subsequent tests, using tomato as an indicator plant, revealed virtually no visible deposit when applied at the correct rate.

Spray deposit
Five of the fungicides (Amistar, Bavistin DF, Rubigan, Stroby WG and Thiovit) left a visible spray deposit on most of the plants. This was evident after spray 1 and had increased only slightly when assessed 14 days after spray 3 (Tables 1-3). Deposit left by Bavistin DF, Rubigan and Thiovit were most noticeable, resulting in more than 10% cover of leaf area and 3-10% cover of bract area (Table 2). Amistar and Stroby WG left a relatively slight deposit (< 4% leaf and bract area after 3 sprays), and many of the plants were marketable although not of excellent quality (see later). Fungaflor and Systhane 20EW were clearly the best treatments in terms of not leaving a spray deposit.

Scorch and other crop damage
Two fungicides, at the rates and conditions used, resulted in crop damage. Nimrod-T caused a slight pale brown scorch of leaf and bract margins of some plants. No damage was visible on 27 November, 5 days after the first spray and only a few bracts on 6 December, 7 days after the second spray. However, by 14 days after spray 3, 21% of Cortez and 34% of Maren showed symptoms (Appendix 2). The damage was very slight on cv. Cortez and all plants were still marketable most at supermarket standard, but more obvious on cv. Maren and, although all plants were marketable, 33% were downgraded to open market standard.

Most plants of cv Maren treated with Amistar showed slight dark-red speckling of bracts at the second assessment on 6 December (Appendix 2). By 11 days after the third spray, bract damage was visible on all plants of cv. Maren but was not evident on Cortez (Appendix 2). No leaf damage was seen on either variety. This contributed to reduced quality and downgrading of all Maren

plants from supermarket to open market standard or reject (Tables 4 - 5). Cortez were downgraded from supermarket to open market standard because of Amistar deposit. Bract speckling and spotting symptoms on both varieties were more noticeable after 3 weeks in the shelf-life room (Table 6) and none of the four plants stored would have been marketable. The damage on Cortez showed as purple spots (i.e. damage symptoms were larger and darker than those on cv. Maren).

Marketability

The overall effect of fungicide treatment on crop marketability is shown in Table 4. Fungaflor and Systhane were outstanding, with all plants of both varieties still being of supermarket standard after 3 spray applications.

All plants treated with Stroby WG were marketable, though not of the highest quality due to spray deposit. It was noted that this fungicide when mixed was a pale brown in colour, while most others were milky white or creamy (Thiovit was very cloudy). It is possible that Stroby WG may leave less deposit on poinsettia if applied at a rate lower than 0.3 kg/ha, or if applied only once to a crop.

Most plants treated with Nimrod-T were marketable, although this experiment demonstrated, and grower reports confirm, there is a risk of leaf and bract edge scorch with this product, especially on the paler varieties.

Bavistin DF and Thiovit + Agral both left very obvious deposits, resulting in over 50% of plants being unmarketable. Treatment with these products should be restricted to propagation stage, so that there is time for deposit to be washed off, or for deposit-covered leaves to fall before the crop is marketed.

Shelf life test

Results need to be interpreted with caution as only two plants of each colour of each treatment were stored. Nevertheless, there is an indication that all fungicides, except for Nimrod-T, resulted in a downgrading of plant quality after 3-weeks storage, compared with untreated and water-sprayed plants. This result reinforces the strategy that, wherever possible, foliar fungicides should not be applied to mature plants of poinsettia. Rather, if shown to be effective, it would be preferable to control powdery mildew diseases early in the crop production cycle.

Spray cover

The water sensitive paper indicated good spray coverage of the upper surface of leaves and bracts at the spray volume (330 ml/m^2) and pressure (2 Bar) we used (Table 7).

Conclusions

1. Two fungicides (Fungaflor and Systhane 20EW) were demonstrated to leave no significant deposit or cause crop damage when three sprays were applied to mature poinsettia cultivars Cortez and Maren in November and December 2001. Their safety to young, rooted cuttings and when applied at higher temperatures (e.g. in summer) was not evaluated in this study.

2. Amistar caused bract speckling which was particularly obvious on the pink variety Maren. Damage increased with storage and made plants unmarketable. Damage was also observed on cv. Cortez, after shelf like storage.

3. Nimrod-T caused slight leaf and bract scorch.

4. At rates used in this trial, Bavistin DF, Rubigan, Stroby WG and Thiovit + Agral left a very obvious visible deposit which would severely downgrade plant value if these fungicides were used on mature plants. There may be opportunity to use them on cuttings or young plants without adverse effects persisting to the marketing stage.

5. Application of fungicides at 330 ml/m^2 and 2 Bar pressure using a single, flat fan nozzle resulted in good coverage of the upper surface of leaves and bracts.

Technology transfer

1. Powdery mildew diseases of poinsettia - and then there were five. Presentation to the Poinsettia Growers Group, HRI Wellesbourne, November 2001 (Tim O'Neill).

2. Powdery mildew of poinsettias - evaluation of fungicides for crop safety. Presentation to growers at the Poinsettia Open Day, HRI Efford, 10 January 2002 (Harry Kitchener).

3. Poinsettia growers gather for disease advice. *Horticulture Week*, November 29, p4 (News item).

4. HDC grower factsheet in preparation on 'Powdery mildew diseases of poinsettia'

Acknowledgements

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Table 1. Effect of fungicide sprays on appearance of poinsettia - number of plants with spray deposit

Treatment	Mean no plants (of 8) with visible deposit on leaves		
	27 Nov (T1 + 5)	6 Dec (T2 + 7)	17 Dec (T3 + 14)
1. Untreated	0.5	0	0
2. Water (control)	2.0	0	0
3. Amistar	7.2	4.7	7.8
4. Bavistin DF	8.0	8.0	7.8
5. Fungaflor	0	0	0
6. Nimrod	0.2	1.3	1.0
7. Rubigan	-	-	-
8. Stroby	8.0	5.7	8.0
9. Systhane 20EW	0.2	0.2	1.0
10. Thiovit + Agral	8.0	8.0	8.0
Significance (18 df)	<0.001	<0.001	<0.001
SED	0.54	1.50	0.65

Table 2. Effect of fungicide sprays on appearance of poinsettia - 6 December 2001 (7 days after spray 2)

Treatment	Visible spray deposit (% cover)		Scorch (% area)	
	Leaves	Bracts	Leaves	Bracts
1. Untreated	0	0	0	0
2. Water (control)	0	0	0	0
3. Amistar	1.4 (5.5)	2.3 (8.4)	0	0.9
4. Bavistin DF	10.9 (19.1)	4.9 (12.7)	0	0
5. Fungaflor	0	0	0	0
6. Nimrod-T	0.3 (1.7)	0	0	0.2
7. Rubigan	-	-	-	-
8. Stroby	1.5 (6.1)	3.1 (9.9)	0	0
9. Systhane 20EW	0.1 (0.5)	0	0	0
10. Thiovit + Agral	10.8 (19.1)	3.0 (6.8)	0	0
Significance (18 df)	-	(<0.001)	-	0.008
SED	-	(0.86)	-	-

Mean results for cvs Cortez and Maren
Deposit data analysed by ANOVA; angular transformed data are shown in parenthesis. Scorch data analysed by Friedman's test.

Table 3. Effect of fungicide sprays on appearance of poinsettia - 17 December 2001 (14 days after spray 3)

Treatment	Visible spray deposit (% cover)		Scorch (% area)	
	Leaves	Bracts	Leaves	Bracts
1. Untreated	0	0	0	0
2. Water (control)	0	0	0	0
3. Amistar	1.8 (7.5)	2.1 (7.9)	0	0.9
4. Bavistin DF	11.3 (19.5)	5.1 (12.9)	0	0
5. Fungaflor	0	0	0	0
6. Nimrod-T	0.2 (1.3)	0	0.6	0.2
7. Rubigan	-	-	-	-
8. Stroby	1.9 (7.8)	3.4 (10.5)	0	0
9. Systhane 20EW	0.1 (1.2)	0	0	0
10. Thiovit + Agral	11.5 (19.7)	8.8 (16.9)	0	0
Significance (18 df)	(<0.001)	(<0.001)	0.036	0.008
SED	(1.30)	(0.81)	-	-

Spray deposit data analysed by ANOVA; angular transformed values shown in parenthesis.
Scorch date analysed by Friedman's test.

Table 4. Effect of fungicides on marketability and shelf life of poinsettia - 2001/02

Treatment	Mean no plants (of 8) at point of sale (17 December)					
	Cortez			Maren		
	Un-market-able	Open market	Super market	Un-market-able	Open market	Super market
1. Untreated	0	0	8	0	0	8
2. Water (control)	0	0	8	0	0	8
3. Amistar	0	8	0	2.7	5.3	0
4. Bavistin DF	5.3	2.7	0	2.7	5.3	0
5. Fungaflor	0	0	8	0	0	8
6. Nimrod-T	0	1.7	6.3	0	2.7	5.3
7. Rubigan	-	-	-	-	-	-
8. Stroby	0	8	0	0	8	0
9. Systhane 20EW	0	0	8	0	0	8
10. Thiovit + Agral	5.5	2.7	0	5	2.7	0.3
Significance (18 df)	-	NS	NS	-	NS	NS
SED		2.14	0.86		2.14	0.86

Table 5. Effect of fungicide treatment on plant quality (17 December)

Treatment	Mean plant quality (0-5)	
	Cortez	Maren
1. Untreated	5.0	5.0
2. Water (control)	5.0	5.0
3. Amistar	2.7	1.7
4. Bavistin DF	1.3	1.7
5. Fungaflor	5.0	5.0
6. Nimrod-T	5.0	4.3
7. Rubigan	-	-
8. Stroby	2.3	2.3
9. Systhane 20EW	5.0	5.0
10. Thiovit + Agral	1.3	1.5
Significance (18 df)	0.028	0.028
SED	0.35	0.35

Table 6. Plant quality after 3 weeks in a shelf-life room (8 January 2002)

Treatment	Mean plant quality (0-5)		Comment
	Cortez	Maren	
1. Untreated	5	5	-
2. Water (control)	5	5	-
3. Amistar	1	1	Bract speckling/deposit
4. Bavistin DF	1	1	Deposit
5. Fungaflor	5	3.5	-
6. Nimrod-T	5	5	Slight leaf scorch
7. Rubigan	-	-	
8. Stroby	1	1	Bract spots/deposit
9. Systhane 20EW	2	2	Bract edge blackening
10. Thiovit + Agral	1	1	Deposit

1 = unmarketable, 2 = acceptable, open market; 3 = good, open market; 4 = good, supermarket standard; 5 = excellent, supermarket standard

Table 7. Spray coverage achieved on mature poinsettia at different positions in the plant canopy - 2001

Position in plant canopy	Mean % bract or leaf cover (± SE)[a]		
	22 Nov	28 Nov	6 Dec
Top	100	90	100
Middle	71	91	80
Base	16	68	50

[a] Each result is the mean of 6 replicate test strips

Appendix 1. Effect of fungicides on appearance of poinsettia - comparison of deposit on varieties

Treatment	Mean no plants (of 8) with visible deposit			
	6 Dec		17 Dec	
	Cortez	Maren	Cortez	Maren
Leaves				
1. Untreated	0	0	0	0
2. Water (control)	0	0	0	0
3. Amistar	4.0	5.3	7.7	8.0
4. Bavistin DF	8.0	8.0	8.0	7.7
5. Fungaflor	0	0	0	0
6. Nimrod-T	0.3	2.3	0.3	1.7
7. Rubigan	-	-	-	-
8. Stroby	5.3	6.0	8.0	8.0
9. Systhane 20EW	0	0.3	1.7	0.3
10. Thiovit + Agral	8.0	8.0	8.0	8.0
Significance (18 df)	NS	NS	NS	NS
SED	1.6	1.6	0.77	0.77
Bracts				
1. Untreated	0	0	0	0
2. Water (control)	0	0	0	0
3. Amistar	7.7	6.3	8.0	6.0
4. Bavistin DF	8.0	8.0	8.0	8.0
5. Fungaflor	0	0	0	0
6. Nimrod-T	0	0	0	0
7. Rubigan	-	-	-	-
8. Stroby	7.0	8.0	8.0	8.0
9. Systhane 20EW	0	0	0	0
10. Thiovit + Agral	8.0	8.0	8.0	8.0
Significance (18 df)	0.03	0.03	<0.001	<0.001
SED	0.34	0.34	0.18	0.18

Appendix 2. Effect of fungicides on appearance of poinsettia - comparison of scorch on varieties

Treatment	Mean no plants (of 8) with visible scorch or other crop damage			
	6 Dec		17 Dec	
	Cortez	Maren	Cortez	Maren
Leaves				
1. Untreated	0	0	0	0
2. Water (control)	0	0	0	0
3. Amistar	0	0	0	0
4. Bavistin DF	0	0	0	0
5. Fungaflor	0	0	0	0
6. Nimrod-T	0	0	1.7	2.7
7. Rubigan	-	-	-	-
8. Stroby	0	0	0	0
9. Systhane 20EW	0	0	0	0
10. Thiovit + Agral	0	0	0	0
Bracts				
1. Untreated	0	0	0	0
2. Water (control)	0	0	0	0
3. Amistar	0	7.7	0	8.0
4. Bavistin DF	0	0	0	0
5. Fungaflor	0	0	0	0
6. Nimrod-T	0.7	0.3	0.7	0.3
7. Rubigan	-	-	-	-
8. Stroby	0	0	0	0
9. Systhane 20EW	0	0	0	0
10. Thiovit + Agral	0	0	0	0

Appendix 3.

Heavy deposit following treatment with Thiovit.

Specking on cv. Maren following treatment with Amistar.

Bract margin scorch following treatment with Nimrod-T

Deposit from Bavistin DF at 1g/l.

No deposit or damage : Untreated plants.

Overall trial views