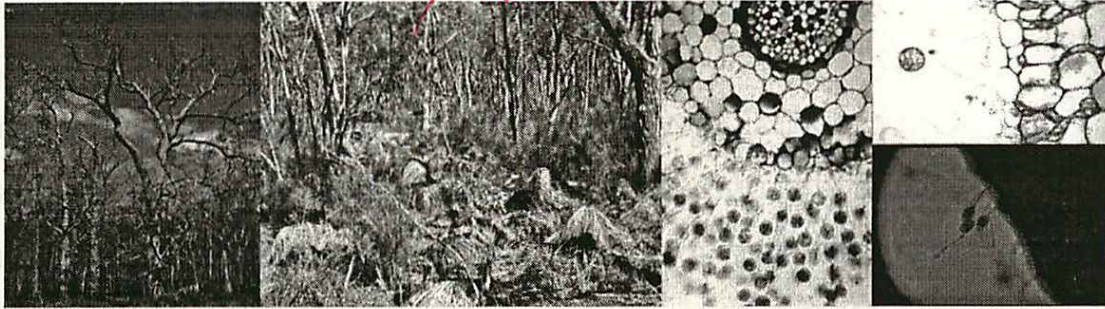


+ R&B Summary + o ANALYSIS
 TBS/10/06
Plant Summary + o Some literature data
 + o unit data re HARRING INFO 26/7/04
Michael Phillips

05 '06



Survey for *Phytophthora cinnamomi* within the Kew Cottages site, Kew, Victoria

A consultancy undertaken by the
 The School of Ecosystem Science for Walker Corporation Pty Limited

I. W. Smith, D. I. Smith and P. A. Clements

October 2006



School of Forest and Ecosystem Science

123 Brown Street, Heidelberg, Victoria, 3084, Australia

Q's.

16/10/6

1. What was PRAY (Feb - Jun 74 months?) till May/June?
2. Is the claim "RELATIVELY high water" accurate?
3. Are soil traps + moisture indices (pH)?
(If not why not?)
4. Do the ^{June} TRIP DEPTHS MATCH FEED DEPTHS?
(0-15) (0-100)
(If not why not?)
5. Are ALL samples Accounting for? 0-108 v. 0-118
Missile: 1A, 37, 59, 8A, 95,
11A, 115, 116, 117.
6. Do any of the above issues explain why FEED
PC APPARENTLY NOT FOUND ON PRAY LANDS IN JUNE
7. How FAR are trip sites from DRAG + GRIND
TRAPS INDICATED BY HEL?

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1. INTRODUCTION

Phytophthora cinnamomi Rands (Cinnamon Fungus) is an introduced soil-borne fungus that attacks and destroys both the fine feeder roots and the main roots and collars of many native and introduced plants (Marks and Smith 1991). It has an extremely wide host range and in time may be responsible for a permanent change to some vegetation communities and the wildlife that depend on them. The disease is also a serious problem in horticulture. The pathogen has also been listed as a threatening process and is currently the subject of a National Threat Abatement Plan (Environment Australia, 2001) and a draft strategy for its management in Victoria (DSE 2006).

The primary sources of introduction of the fungus to an area are:

- (i.) use of infested gravel in road constructions,
- (ii.) infested soil adhering to earth moving equipment, vehicles, trail-bikes and other machinery
- (iii.) use of infected nursery stock.

Once established in a susceptible plant community, there is no known means of eradication. It is widely distributed across Melbourne and Victoria (DSE 2001). The severity of disease caused by the pathogen is determined by an interaction between host susceptibility, and environmental parameters of soil type, soil moisture and temperature (DSE 2001, Marks and Smith 1991).

2. BACKGROUND TO CONSULTANCY

In February 2006, John Ball of Walker Corporation contacted Ian Smith of The School of Ecosystem Science (SFES), The University of Melbourne to examine the cause of death of a dying Bishop Pine (*Pinus muricata*) within the grounds of the Kew Cottages. This followed initial inspections carried out by Rob Galbraith (Galbraith and Associates) who recommended SFES be contacted to ascertain a possible biotic cause.

The inspection on 15 February 2006 showed a tree dying off primarily on one side, although with symptoms spreading across canopy (Figure 1). The symptoms suggested a root problem with some bleeding from trunk. There was little evidence of any insect damage to trunk or branches. Wood cores taken from the trunk of the tree to examine for pathogenic nematodes and fungi, while resin soaked at base, were not coloured and no pathogenic fungi or nematodes were detected.



Figure 1. Dying *Pinus muricata* within the grounds of Kew Cottages, Kew.

Soil samples taken @ 0-10, 20-30, 40-50 and 90-100cm, 2-3m from trunk to the north and south of the tree for presence of soil pathogens revealed the presence of *Phytophthora cinnamomi*. The soils at depth were also waterlogged suggesting either overwatering or pipe leakage. Waterlogged soils can predispose a susceptible species to development of the disease. However little is known of the susceptibility of *Pinus muricata* to *Phytophthora cinnamomi*. Recommendations were made as to treatment which included determining cause of waterlogging, fungicide application, hygiene, mulch and if tree decline continued, tree removal and replacement.

In June 2006, Walker corporation contacted SFES to undertake a survey of *Phytophthora* across the site. While winter is normally not the ideal time to undertake surveys for *Phytophthora* due to low temperatures, concurrent health surveillance activities in Victoria that were being undertaken by SFES in June had shown that isolation of the pathogen in this year was not being suppressed due to relatively mild winter being experienced.

?!

Phytophthora
in
Vic?

3. METHODS

A 50 x 50m grid was laid across the site using a differential GPS from the 30th June to 25th July 2006. Within a 3m radius circle at each grid point, a soil sample containing five sub-samples, each containing approximately 200g of soil, were excavated from the top 15cm of soil. The sub-samples were pooled together to make one sample to be tested for each grid point. A total of 108 samples were collected from the site. Identification of *Phytophthora* from soil was carried out using the eucalypt cotyledon method for soil baiting (Marks and Kassaby 1974). *Phytophthora* species isolated were identified using morphological characteristics and DNA sequencing.

15cm
7
.

4. RESULTS

No further samples tested positive to *Phytophthora cinnamomi* (Figure 2 and Appendix 1), although another two species of *Phytophthora* (*P. cryptogea* and *P. citricola*) were recorded from the site. These two species are often isolated from soil and have also recently been isolated from the Yarra River. Other species of *Phytophthora* currently in Australia are generally not considered to pose the same level of threat to trees as *Phytophthora cinnamomi*.

5. RECOMMENDATIONS

- Maintain quarantine around the previous infested site during construction works. However due to the absence of *Phytophthora cinnamomi* on the rest of the site, no quarantine restrictions need be maintained within the construction zone. A simple clean on entry approach to machinery will reduce the chance of reintroduction of the pathogen to the site.
- Ensure all gravel, soil and nursery stock to be used on the site is tested free of the pathogen.
- Provide relevant information to the public, and other contractors visiting the site, of the processes in place to minimise the spread of the pathogen and to encourage their compliance.

9/6
904

6. REFERENCES

DSE (2006) Draft Strategic Plan for the management of *Phytophthora cinnamomi* in Victoria

<http://www.dse.vic.gov.au/DSE/nrenpa.nsf/LinkView/9806CA9BCCA6CD68CA2570DE001D13E5FD09C49CA6D3A758CA25705900128933>

Environment Australia (2001) Threat Abatement Plan for Dieback Caused by the Root-rot Fungus *Phytophthora cinnamomi*.

<http://www.deh.gov.au/biodiversity/threatened/publications/tap/phytophthora/index.html>

Marks, G.C. and Kassaby, F.Y. (1974) Detection of *Phytophthora cinnamomi* in Soils. *Australian Forestry* **36**: 198-203

Marks, G.C. and Smith, I.W. (1991) The Cinnamon Fungus in Victorian Forests, Lands and Forests Bulletin No. 31, Department of Conservation and Environment, Victoria.

APPENDIX 1: Results of soil testing for *Phytophthora*.

School of Forest and Ecosystems Science

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Results of Plant Health Diagnosis

Name: Luke McKie
Walker Corporation Pty Limited

Address: PO Box 248 Prahran VIC 3181

Sample Location: Kew Cottages

Tested By: Paul Clements **Collector:** PG/DS/HP

Date of Test: 25/7/2006 **Our Ref:** 1525

Description of Task:

Assess for presence of *Phytophthora
cinnamomi*.

Sample Number	Sample Type	Sample Description/Test	Test Result
1	Soil	Kew Cottage sample 1	Negative Result
2	Soil	Kew Cottage sample 2	Negative Result
3	Soil	Kew Cottage sample 3	Negative Result
4	Soil	Kew Cottage sample 4	Negative Result
5	Soil	Kew Cottage sample 5	Negative Result
6	Soil	Kew Cottage sample 6	Negative Result
7	Soil	Kew Cottage sample 7	Negative Result
8	Soil	Kew Cottage sample 8	Negative Result
9	Soil	Kew Cottage sample 9	Negative Result
10	Soil	Kew Cottage sample 10	Negative Result
11	Soil	Kew Cottage sample 11	Negative Result
12	Soil	Kew Cottage sample 12	Negative Result
13	Soil	Kew Cottage sample 13	Negative Result
14	Soil	Kew Cottage sample 14	Negative Result
15	Soil	Kew Cottage sample 15	Negative Result
16	Soil	Kew Cottage sample 16	Negative Result
17	Soil	Kew Cottage sample 17	Negative Result
18	Soil	Kew Cottage sample 18	Negative Result
19	Soil	Kew Cottage sample 19	Negative Result
20	Soil	Kew Cottage sample 20	Negative Result
21	Soil	Kew Cottage sample 21	Negative Result
22	Soil	Kew Cottage sample 22	Negative Result
23	Soil	Kew Cottage sample 23	Negative Result
24	Soil	Kew Cottage sample 24	Negative Result
25	Soil	Kew Cottage sample 25	Negative Result
26	Soil	Kew Cottage sample 26	Negative Result

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26	Soil	Kew Cottage sample 27	Negative Result
27	Soil	Kew Cottage sample 28	Negative Result
28	Soil	Kew Cottage sample 29	Negative Result
29	Soil	Kew Cottage sample 30	Negative Result
30	Soil	Kew Cottage sample 31	Negative Result
31	Soil	Kew Cottage sample 32	Negative Result
32	Soil	Kew Cottage sample 33	Negative Result
33	Soil	Kew Cottage sample 34	Negative Result
34	Soil	Kew Cottage sample 35	Negative Result
35	Soil	Kew Cottage sample 36	Negative Result
36	Soil	Kew Cottage sample 38	Negative Result
37	Soil	Kew Cottage sample 40	Negative Result
38	Soil	Kew Cottage sample 41	Negative Result
39	Soil	Kew Cottage sample 42	Negative Result
40	Soil	Kew Cottage sample 43	Phytophthora cryptogea
41	Soil	Kew Cottage sample 44	Negative Result
42	Soil	Kew Cottage sample 45	Negative Result
43	Soil	Kew Cottage sample 46	Negative Result
44	Soil	Kew Cottage sample 47	Negative Result
45	Soil	Kew Cottage sample 48	Negative Result
46	Soil	Kew Cottage sample 49	Negative Result
47	Soil	Kew Cottage sample 50	Negative Result
48	Soil	Kew Cottage sample 51	Negative Result
49	Soil	Kew Cottage sample 52	Negative Result
50	Soil	Kew Cottage sample 53	Negative Result
51	Soil	Kew Cottage sample 54	Negative Result
52	Soil	Kew Cottage sample 55	Negative Result
53	Soil	Kew Cottage sample 56	Negative Result
54	Soil	Kew Cottage sample 57	Negative Result
55	Soil	Kew Cottage sample 58	Negative Result
56	Soil	Kew Cottage sample 60	Negative Result
57	Soil	Kew Cottage sample 61	Negative Result
58	Soil	Kew Cottage sample 62	Negative Result
59	Soil	Kew Cottage sample 63	Negative Result
60	Soil	Kew Cottage sample 64	Negative Result
61	Soil	Kew Cottage sample 65	Negative Result
62	Soil	Kew Cottage sample 66	Negative Result
63	Soil	Kew Cottage sample 67	Negative Result
64	Soil	Kew Cottage sample 68	Negative Result
65	Soil	Kew Cottage sample 69	Negative Result
66	Soil	Kew Cottage sample 70	Negative Result
67	Soil	Kew Cottage sample 71	Negative Result
68	Soil	Kew Cottage sample 72	Negative Result
69	Soil	Kew Cottage sample 73	Negative Result
70	Soil	Kew Cottage sample 74	Negative Result
71	Soil	Kew Cottage sample 75	Negative Result
72	Soil	Kew Cottage sample 76	Negative Result
73	Soil	Kew Cottage sample 77	Negative Result
74	Soil	Kew Cottage sample 78	Negative Result
75	Soil	Kew Cottage sample 79	Negative Result

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76	Soil	Kew Cottage sample 80	Phytophthora citricola.
77	Soil	Kew Cottage sample 81	Negative Result
78	Soil	Kew Cottage sample 82	Negative Result
79	Soil	Kew Cottage sample 83	Negative Result
80	Soil	Kew Cottage sample 85	Negative Result
81	Soil	Kew Cottage sample 86	Negative Result
82	Soil	Kew Cottage sample 87	Negative Result
83	Soil	Kew Cottage sample 88	Negative Result
84	Soil	Kew Cottage sample 89	Negative Result
85	Soil	Kew Cottage sample 90	Negative Result
86	Soil	Kew Cottage sample 91	Negative Result
87	Soil	Kew Cottage sample 92	Negative Result
88	Soil	Kew Cottage sample 93	Negative Result
89	Soil	Kew Cottage sample 94	Negative Result
90	Soil	Kew Cottage sample 96	Negative Result
91	Soil	Kew Cottage sample 97	Negative Result
92	Soil	Kew Cottage sample 98	Negative Result
93	Soil	Kew Cottage sample 99	Negative Result
94	Soil	Kew Cottage sample 100	Negative Result
95	Soil	Kew Cottage sample 101	Negative Result
96	Soil	Kew Cottage sample 102	Negative Result
97	Soil	Kew Cottage sample 103	Negative Result
98	Soil	Kew Cottage sample 104	Negative Result
99	Soil	Kew Cottage sample 105	Negative Result
100	Soil	Kew Cottage sample 106	Negative Result
101	Soil	Kew Cottage sample 107	Negative Result
102	Soil	Kew Cottage sample 108	Negative Result
103	Soil	Kew Cottage sample 109	Negative Result
104	Soil	Kew Cottage sample 110	Negative Result
105	Soil	Kew Cottage sample 111	Negative Result
106	Soil	Kew Cottage sample 112	Negative Result
107	Soil	Kew Cottage sample 113	Negative Result
108	Soil	Kew Cottage sample 118	Negative Result

Diagnosis:

All samples collected tested negative to the presence of *Phytophthora cinnamomi*. Sample No.43 tested positive to the presence of *Phytophthora cryptogea* and No.80 tested positive for the presence of *Phytophthora citricola*. However these *Phytophthora* species currently in Australia are not considered to pose a significant risk to trees in the Kew Cottages gardens.

Recommendation:

Maintain quarantine around previous infested site during construction works. Due to the absence of *Phytophthora cinnamomi* on the rest of the site, no quarantine restrictions need be maintained within the construction zone. A simple clean on entry approach to machinery will reduce the chance of reintroduction of the pathogen to the site.

Additional Remarks:

108 samples were collected and tested from a 50 x 50m grid laid across the site using a differential GPS from the 30th June to 25th July 2006.

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Monday, 3 July 2006

MONTHLY CLIMATE SUMMARY - VICTORIA

Cold, dry start to winter - Victoria in June 2006

Rainfall Summary

Rainfall totals across most of Victoria were well below average (third lowest **June** average on record), except for East Gippsland, where periodic lows off the coast during the month gave the area average rainfall.

The rest of Victoria was dry, particularly the West Coast and West Gippsland regions due to blocking high pressure systems. Ballarat had its lowest **June** rainfall on record (12.8 mm, average 55.3 mm) while a number of stations had their lowest rainfall for at least 20 years including **Melbourne** 8.6 mm (previous lowest 8.0 mm in 1858) and Nhill 4.2 mm (previous 3.5 mm in 1930).

Click here to view [maps of rainfall for Victoria](#), and [long term climate trends for Victoria](#).

Temperature Summary

Average minimum **temperatures** were generally between 0 and 6 degrees although in the Northeast the average was between -3 and 0 degrees. Across Victoria the average minimum temperature was the second lowest on record for **June** (-2.13 degrees below average).

The average maximum **temperatures** were mostly between 12 and 15 degrees except in the Northeast where maximum **temperatures** averaged between 9 and 12 degrees. Maximum **temperatures** were mostly within 1 degree of normal for **June** throughout Victoria.

Due to the cold nights during **June**, the mean temperature across Victoria was the third lowest on record (-1.09 degrees below average).

Click here to view [maps of temperature for Victoria](#), and [long term climate trends for Victoria](#).



Tuesday, 1 August 2006

MONTHLY CLIMATE SUMMARY - VICTORIA

Variable rainfall and mild nights - Victoria in July 2006

Rainfall Summary

Average to below average rainfall was recorded in most areas during July although parts of Gippsland and northern Victoria received above average rainfall.

The highest rainfall total for the month was 107.1 mm at Point Hicks (Lighthouse) on the Gippsland coast while Longerenong, in the Wimmera, received the lowest total rainfall of 23.4 mm.

Click here to view [maps of rainfall for Victoria](#), and [long term climate trends for Victoria](#).

Temperature Summary

Maximum temperatures were mostly near normal for July although in the northeast warmer conditions were experienced, with temperatures between 1 and 2 degrees above normal. The highest temperature (21.2 degrees) occurred at Mildura on the 10th.

Unlike June, when there were many cold, frosty nights, minimum temperatures were near normal or slightly higher during July. Eastern Victoria in particular experienced mild nights, with minimum temperatures between 1 and 3 degrees above normal. The mild nights were due to cloud cover, provided by cold fronts and other weather systems, acting like a blanket and trapping heat near the surface. The warmest night (minimum 12.5 degrees) occurred at Geelong Airport on the 17th.

Click here to view [maps of temperature for Victoria](#), and [long term climate trends for Victoria](#).

Significant Weather Systems

In contrast to June, when high pressures systems dominated over Victoria, there were a number of significant cold fronts and low pressure systems during July which brought much needed rain to the state.

Early in the month, on the 2nd, a cold front and associated low pressure system crossed Victoria bringing rain to most areas. The next significant cold front moved over the state on the 11th with strong to gale force winds ahead of and behind the front. Rainfall with this system was only patchy, however, with totals mostly 5 mm or less.

From the 15th to the 17th a low pressure system that had developed over inland Australia moved over northern Victoria and brought widespread

Significant Weather Systems

Victoria was dominated by slow-moving high pressure systems during **June 2006**.

Early in the month a low pressure system off the east coast of Victoria brought significant rain to East Gippsland, with Orbost receiving 42 mm on the 2nd.

A significant front and associated rain band moved across Victoria from the 23rd to 24th of **June** and a number of weaker fronts crossed the state in the last week of **June**.

Melbourne Summary

Melbourne recorded only 8.6 mm of rain for **June**, which was the second lowest **June** total on record, the lowest being 8.0 mm in **June** 1858. The Central (Metropolitan) district recorded its lowest **June** district average rainfall (18.9 mm) since the District records began in 1890 (average 74.1 mm), the previous lowest being 20.1 mm in 1972.

The night-time temperatures (average 6.3 degrees) were also below average (7.2 degrees) with **Melbourne** experiencing the coolest nights since 1982 (average 5.6 degrees). Scoresby had the lowest average minimum temperature for **June** (4.1 degrees) since records began there in 1948. Laverton (3.9 degrees) and Moorabbin (4.6 degrees) recorded their lowest average minimum temperature for **June** since 1972 (3.0 degrees and 4.0 degrees respectively).

In contrast to the low minimum temperatures, **Melbourne's** maximum temperatures for **June** were spot on average (14.3 degrees).

Included in this summary are a table of State extremes, some new records, and summaries for locations across the State. Visit our maps of rainfall and **temperatures** for this month.

Please contact us for further information.

Victorian Climate Services Centre
Bureau of Meteorology
Ms Monica Long (03) 9669 4949
Email climate.vic@bom.gov.au

This statement has been prepared based on information available at 9 AM on Monday 3 July **2006**. Although every effort has been made to check them, it is possible that results may change as new information becomes available.

Extremes

Weather extremes during June 2006		
Highest temperature Hottest day	19.6 °C	Mildura Airport on 29th
Highest mean daily maximum temperature Warmest days on average	15.3 °C	Mildura Airport and Ouyen (Post Office)
Lowest mean daily maximum temperature Coolest days on average	0.8 °C	Mt Hotham

Weather extremes during June 2006		
Lowest daily maximum temperature Coldest day	-4.4 °C	Mt Hotham on 11th
Lowest temperature Coldest night	-8.1 °C	Mt Hotham on 11th
Lowest mean daily minimum temperature Coldest nights on average	-3.4 °C	Mt Hotham
Highest mean daily minimum temperature Mildest nights on average	9.8 °C	Wilson's Promontory Lighthouse
Highest daily minimum Warmest night	11.8 °C	Wilson's Promontory Lighthouse on 22nd
Highest total rainfall Wettest overall	89.0 mm	Orbost
Lowest total rainfall Driest overall	4.2 mm	Nhill
Highest daily rainfall Wettest day	42.0 mm	Orbost on 2nd

Records

Record Lowest Total Rainfall for June				
	Total rainfall for June 2006 (mm)	Previous lowest for June		Years of record
Ballarat Aerodrome	12.8	14.0	in 1969	99
Noojee	19.6	54.4	in 2005	25
Hamilton Airport	11.2	33.2	in 1997	22
Morwell	8.2	27.4	in 2005	22
Wangaratta Aero	23.4	29.6	in 1997	20

Lowest Total Rainfall for 20 or more years for June				
	Total rainfall for June 2006 (mm)	Most recent lower for June		
Melbourne Regional Office	8.6	8.0	in 1858	
Nhill	4.2	3.5	in 1930	
Horsham	5.8	5.6	in 1967	
Cape Otway Lighthouse	40.2	34.2	in 1969	
Lake Eildon	30.6	28.8	in 1974	
Wilson's Promontory Lighthouse	52.8	41.7	in 1974	
Castlemaine Prison	18.4	13.7	in 1975	
Mangalore Airport	14.6	14.2	in 1975	
East Sale Airport	11.2	6.8	in 1979	
Wonthaggi	48.7	38.0	in 1979	

Lowest Total Rainfall for 20 or more years for June			
	Total rainfall for June 2006 (mm)	Most recent lower for June	
Maryborough	23.8	20.6	in 1986
Ouyen	11.0	7.2	in 1986

Lowest Mean Maximum Temperature for 20 years or more for June			
	Mean daily maximum temperature for June 2006 (°C)	Most recent lower for June	
East Sale Airport	13.5	13.3	in 1983
Morwell	13.2	12.9	in 1986

Record Lowest Mean Daily Minimum Temperature for June				
	Mean daily minimum temperature for June 2006 (°C)	Previous lowest for June		Years of record
Echuca Aerodrome	0.9	1.3	in 1982	124
Nhill	0.4	= 0.4	in 1972	107
Benalla	0.5	0.7	in 1982	103
Ballarat Aerodrome	1.8	= 1.8	in 1937	98
Ouyen	2.2	= 2.2	in 1982	70
Lake Eildon	1.1	1.6	in 1972	37
Portland	4.5	5.8	in 1998	24
Albury Airport	0.2	1.0	in 1984	23
Hamilton Airport	2.9	3.5	in 1984	22
Wangaratta Aero	-2.2	1.1	in 1997	20

Lowest Mean Minimum Temperature for 20 years or more for June			
	Mean daily minimum temperature for June 2006 (°C)	Most recent lower for June	
Mangalore Airport	0.8	0.6	in 1966
Longerenong	1.3	0.6	in 1972
East Sale Airport	2.3	1.9	in 1982
Melbourne Regional Office	6.3	5.6	in 1982
Mildura Airport	2.4	2.2	in 1982
Morwell	2.7	2.1	in 1985

Record Lowest Temperature for June					
	Lowest temperature in June 2006 (°C)		Previous lowest for June		Years of record
Benalla	-4.5	on 14th	-4.4	on 26th in 1965	103
Kerang	-3.4	on 14th	= -3.4	on 9th in 1982	97
Longerenong	-4.8	on 15th	= -4.8	on 6th in 1982	74
Mildura Airport	-3.7	on 15th	-3.3	on 8th in 1982	60
Mangalore Airport	-4.7	on 15th	-4.4	on 6th in 1966	47
Albury Airport	-4.0	on 12th	= -4.0	on 19th in 1998	23
Wangaratta Aero	-7.2	on 14th	-5.6	on 19th in 1998	20

Summaries

Summary statistics for June 2006

	Maximum temperatures for June (°C)			Minimum temperatures for June (°C)			To f 20
	Mean for 2006	Difference from normal	Highest for 2006	Mean for 2006	Difference from normal	Lowest for 2006	
Albury Airport	14.5	+0.7	17.1	0.2	-3.3	-4.0	
Bairnsdale Airport	13.7	-1.2	16.8	4.1	-0.7	-0.7	
Ballarat Aerodrome	11.2	+0.3	15.1	1.8	-2.2	-2.7	
Benalla	14.9	+1.1	17.5	0.5	-2.6	-4.5	
Bendigo Airport	13.3	+0.3	16.3	0.9	-3.4	-4.8	
Cape Otway Lighthouse	12.8	-0.6	15.2	7.6	-0.9	4.0	
Castlemaine Prison	12.6	-0.2	16.5	1.5	-1.2	-3.1	
Cerberus	13.4	-0.4	15.9	4.2	-4.7	-1.1	
Colac	11.4	-2.0	13.4	5.3	+0.7	2.8	
Coldstream	12.9	-1.2	17.4	1.3	-2.9	-3.1	
East Sale Airport	13.5	-0.7	15.7	2.3	-1.6	-2.7	
Echuca Aerodrome	14.6	+0.3	17.3	0.9	-3.4	-4.2	
Geelong Airport	13.6	-1.0	16.7	4.1	-1.8	-0.5	
Hamilton Airport	12.6	-0.3	16.4	2.9	-2.1	-1.1	
Horsham	14.5	+0.3	17.0	0.8	-3.3	-5.0	
Kerang	15.0	+0.3	17.2	2.1	-2.4	-3.4	
Kilmore Gap	9.3	+0.8	12.6	3.9	+0.4	1.3	
Lake Eildon	12.3	+0.1	16.0	1.1	-2.8	-1.8	
Longerenong	14.1	+0.2	17.0	1.3	-2.7	-4.8	

Summary statistics for June 2006

	Maximum temperatures for June (°C)			Minimum temperatures for June (°C)			To f 20
	Mean for 2006	Difference from normal	Highest for 2006	Mean for 2006	Difference from normal	Lowest for 2006	
Mangalore Airport	13.7	+0.3	17.1	0.8	-3.0	-4.7	
Maryborough	13.3	+0.4	16.7	1.3	-2.6	-3.4	
Melbourne Regional Office	14.3	0	17.0	6.3	-1.0	2.7	
Mildura Airport	15.3	-0.6	19.6	2.4	-2.7	-3.7	
Morwell	13.2	-0.8	16.3	2.7	-1.8	-2.5	
Mt Hotham	0.8	-1.1	5.7	-3.4	-0.4	-8.1	
Nhill	14.4	0	16.8	0.4	-3.7	-6.0	
Noojee	11.8	-0.7	15.5	2.0	-2.1	-1.6	
Orbost	14.0	-1.3	18.3	5.7	+0.5	1.8	
Ouyen	15.3	-0.4	19.0	2.2	-2.7	-3.0	
Point Hicks	14.2	-0.3	18.6	8.2	-0.6	2.5	
Portland	13.1	-0.6	15.1	4.5	-2.6	-1.1	
Shepparton Airport	14.5	+0.7	16.7	0.1	-3.5	-5.9	
Stawell Aerodrome	13.2	+0.4	16.8	1.9	-2.6	-3.2	
Swan Hill Aerodrome	15.1	0	17.6	1.7	-3.2	-4.2	
Wangaratta Aero	14.6	+0.8	17.8	-2.2	-5.5	-7.2	
Warracknabeal Museum	14.6	+0.1	16.5	1.9	-2.2	-3.6	
Warrnambool Airport Ndb	13.5	-0.2	15.7	3.6	-2.1	-3.4	
Wilsons Promontory Lighthouse	12.7	-0.1	15.2	9.8	+0.3	8.4	
Wonthaggi	13.4	-0.6	18.0	5.4	-0.8	1.2	
Yarrawonga	14.8	+0.4	19.3	0.6	-3.7	-5.3	

Note

This statement has been prepared based on information available at 9 AM on Monday 3 July 2006. Although every effort has been made to check them, it is possible that results may change as new information becomes available. Long term averages are calculated using the WMO standard of 1961 to 1990.

Climate averages for Victoria localities are available [here](#).

Please use the following localities to cover these regions: Coldstream for the Yarra Glen area; Ceberus for the Mornington Peninsula; Morwell for the Latrobe Valley; Mangalore for Seymour; Mt Hotham for the Alpine area.

Daily Weather Observations for selected Victoria localities are available [here](#).

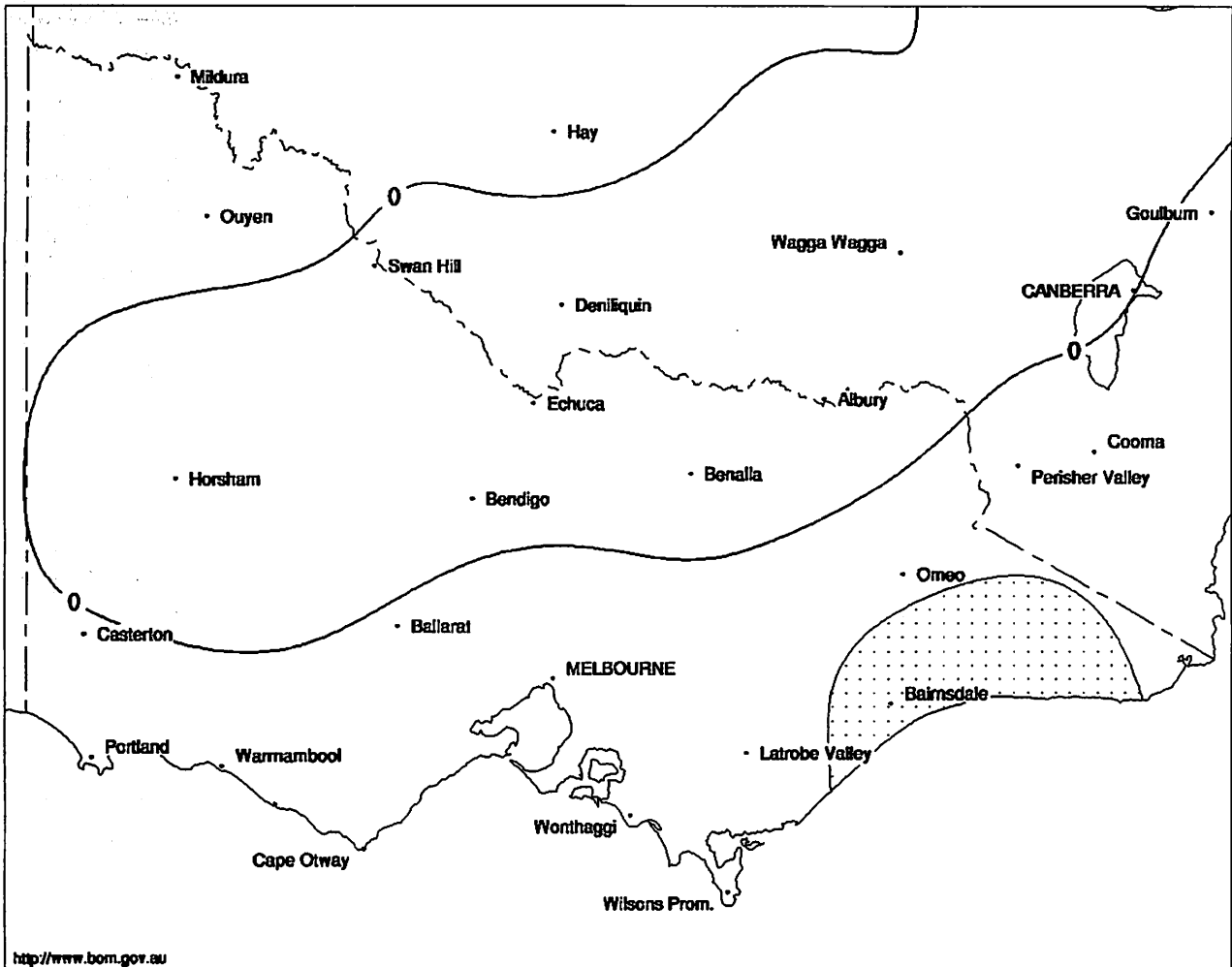
Please contact us for further information.

Victoria Climate Centre
Bureau of Meteorology
Ms Monica Long (03) 9669 4949
Email climate.vic@bom.gov.au

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Maximum Temperature Anomaly (°C) June 2006

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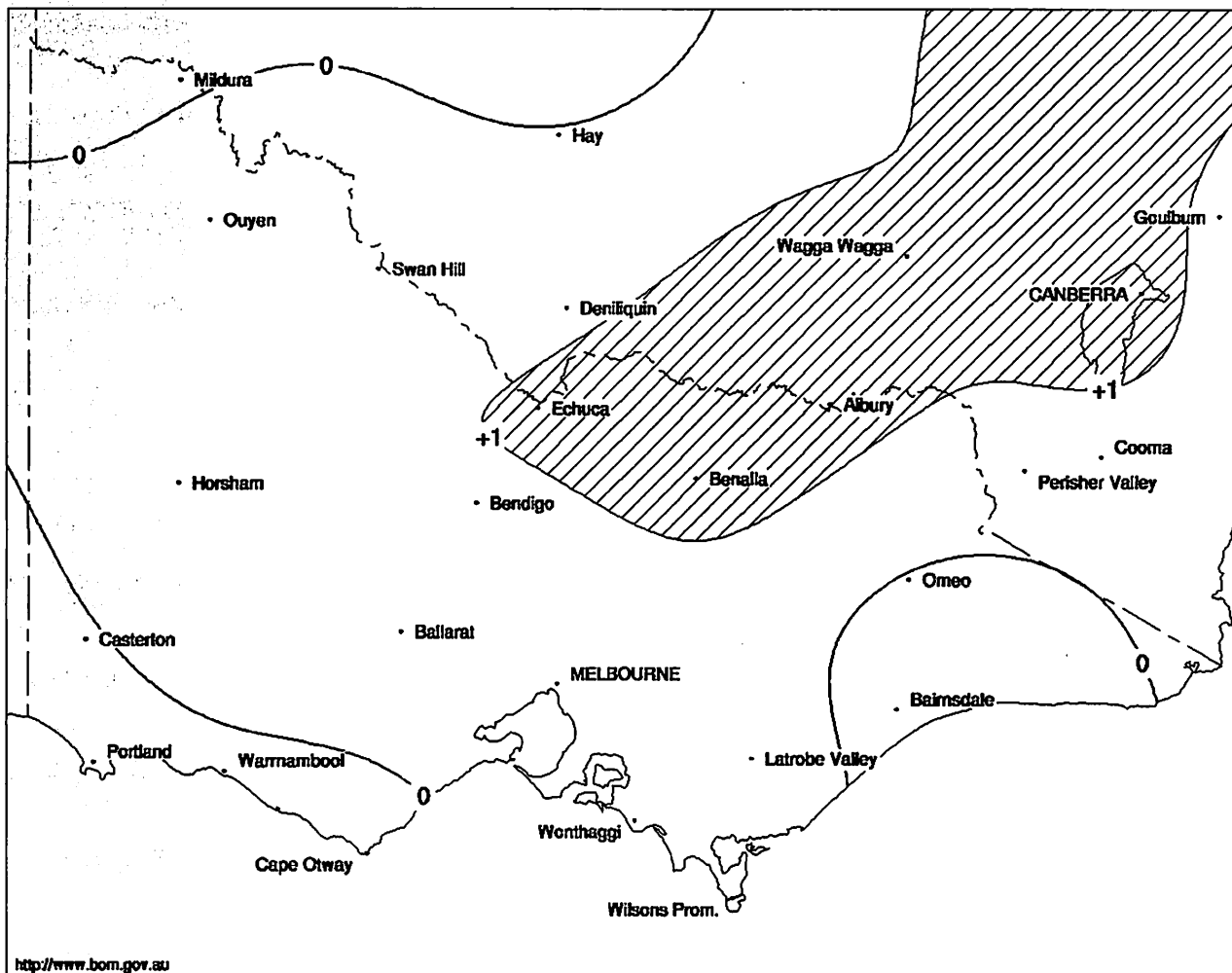
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Maximum Temperature Anomaly (°C) July 2006

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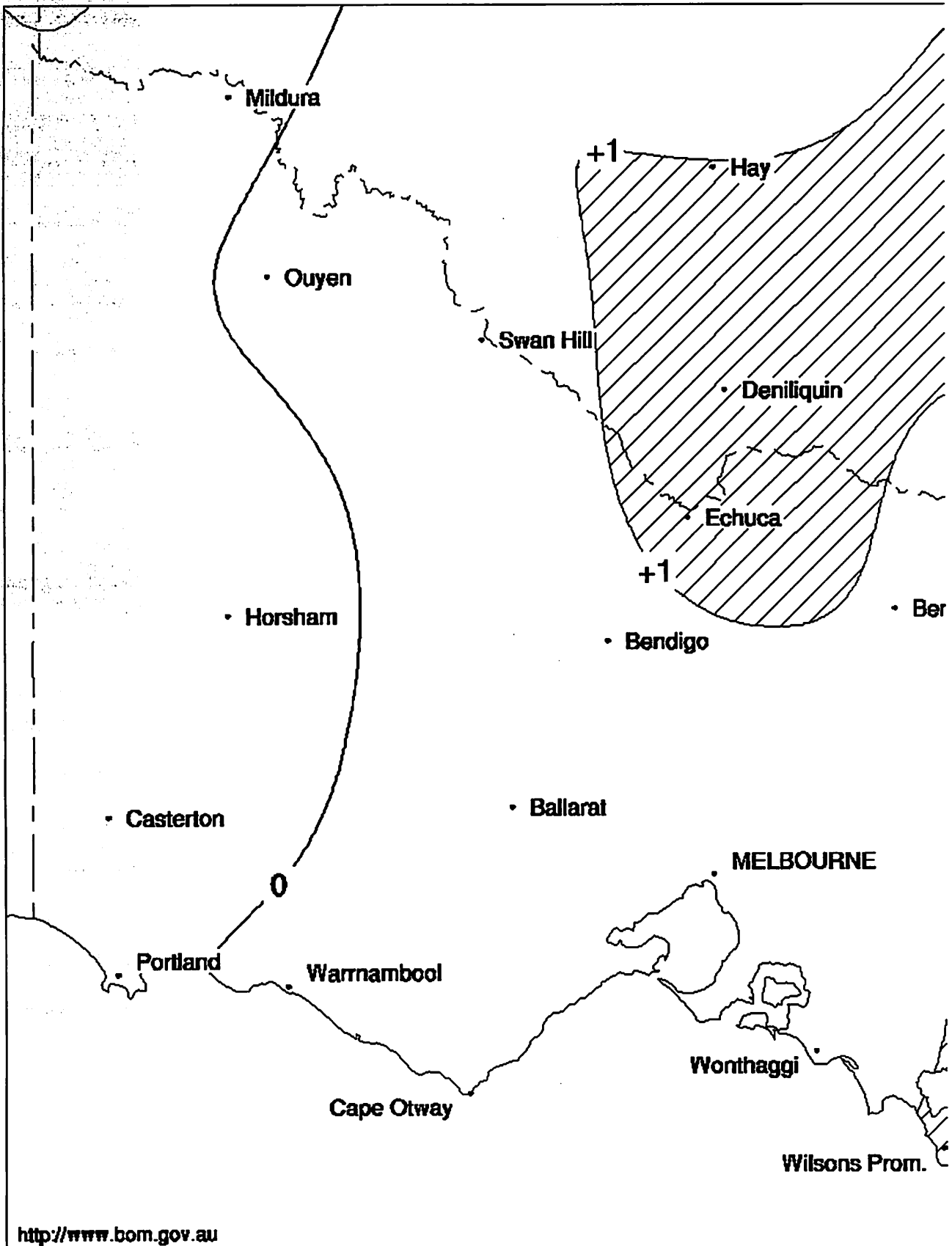
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Issued: 30/08/2006

Minimum Temperature Anomaly (°C)

Product of the National Climate Centre



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[HortTech] Phytophthora cinnamomi mapping

Richard Phillips horttech@lists.rbg.vic.gov.au

Wed, 28 Jul 2004 14:10:16 +1000

- Previous message: [HortTech] RBG Melbourne plant diseases (ON LEAVE)
- Next message: [HortTech] RBG Melbourne plant diseases
- Messages sorted by: [date] [thread] [subject] [author]

--Boundary_ (ID_19MZZifXzfljH59cvu4zwh)
Content-type: text/plain; charset="us-ascii"; format=flowed

Greetings,
further on the subject of Phytophthora cinnamomi diagnosis, management and control.

Here at the University of Melbourne's Parkville Campus, we understand that PC is present in a number of areas.

We will be re-mapping this year for the presence of PC. I've spoken to Ian Smith, Senior Forest Pathologist at the Forest Science Centre to discuss the testing methodology, and will be undertaking extensive soil testing as soon as the weather gets warmer.

I would be very interested in hearing from anyone in the group with experience in testing and mapping for PC in an urban park environment. Particularly in modeling for PC using GIS.

As an aside, has anyone had any success in managing PC using Acacia or Eucalypt bark mulches?

Cheers,

Richard Phillips

Grounds Officer (Planning)

Property & Buildings

The University of Melbourne

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(: 8302 6656 / 8344 5115

At 11:29 AM 28-07-04, you wrote:

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>When replying, please edit your Subject line so it is more specific

>than "Re: Contents of HortTech digest..."

>

>

>Today's Topics:

>

> 1. RBG Melbourne plant diseases (Peter Symes)

> 2. RE: RBG Melbourne plant diseases (Brett Summerell)

> 3. Re: RBG Melbourne plant diseases (Peter Jones)

>

>--- -- --

>

>Message: 1

>From: "Peter Symes" <Peter.Symes@rbg.vic.gov.au>

>To: <horttech@lists.rbg.vic.gov.au>

>Date: Wed, 28 Jul 2004 07:27:41 +1000

>Subject: [HortTech] RBG Melbourne plant diseases

>Reply-To: horttech@lists.rbg.vic.gov.au

>

>This is a MIME message. If you are reading this text, you may want to
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>----- NextPart_ST_07_28_11_Wednesday_July_28_2004_25905

>Content-Type: text/plain; charset=US-ASCII

>Content-Transfer-Encoding: 7bit

>

>Hi all,

>

>Phytophthora cinnamomi has been diagnosed in many garden areas across

>RBG Melbourne. Yet, it is only occasionally expressed as symptoms or

>visible damage to plants. Do you have the same experiences in your

>sites?

This is Google's cache of <http://lists.rbg.vic.gov.au/pipermail/horttech/2002-December/000091.html> as retrieved on 18 Aug 2006 22:00. Google's cache is the snapshot that we took of the page as we crawled the web. The page may have changed since that time. Click here for the [current page](#) without highlighting. This cached page may reference images which are no longer available. Click here for the [cached text](#) only. To link to or bookmark this page, use the following url:
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These search terms have been highlighted: **phytophthora**

[HortTech] Testing for Phytophthora cinnamomi

Brett Summerell Brett.Summerell@rbgsyd.nsw.gov.au

Fri, 13 Dec 2002 08:26:24 +1100

- Previous message: [HortTech] Testing for **Phytophthora cinnamomi**
- Next message: [HortTech] Out of office request
- Messages sorted by: [date] [thread] [subject] [author]

Frith

Unfortunately there is no simple method for testing for Pc - we do it routinely here and it involves collecting soil samples, baiting for Pc and isolation on very specific isolation media and then identification under the microscope. Pc is relatively straight forward to identify on morphology but the other species require DNA fingerprinting for identification.

If you need any further information or advice on Pc matters please contact us.

Best wishes

Brett Summerell

Dr Brett Summerell
 Manager, Conservation and Horticultural Research
 Senior Research Scientist
 Plant Disease Diagnostic Unit
 Royal Botanic Gardens, Sydney
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 Australia

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 facsimile: +61 2 9241 1135

email: Brett.Summerell@rbgsyd.nsw.gov.au

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>>> "Frith Jarrad" <Frith.Jarrad@rbg.vic.gov.au> 12/12/02 03:48pm >>>
Hi everyone,

Does anyone know of a simple methods of testing for pc presence?

Thanks,
Frith

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HortTech is a forum to further develop knowledge and understanding of