



**Nursery & Garden Industry**

**Australian**  
**Nursery Industry**  
**Myrtle Rust**  
*(Uredo rangelii)*  
**Management Plan**  
**2011**

**Developed for the**  
**Australian Nursery Industry**

**Production**  
**Wholesale**  
**Retail**

## Acknowledgements

This Myrtle Rust Management Plan has been developed by the Nursery & Garden Industry Queensland (John McDonald - Nursery Industry Development Manager) for the Australian Nursery Industry.

Version 01 February 2011

Photographs sourced from I&I NSW and Queensland DEEDI.

Various sources have contributed to the content of this plan including:

- Nursery Industry Accreditation Scheme Australia (NIASA)
- BioSecure HACCP
- Nursery Industry Guava Rust Plant Pest Contingency Plan
- DEEDI Queensland Myrtle Rust Fact Sheets
- I&I NSW Myrtle Rust Fact Sheets and Updates

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While every effort has been made to ensure the accuracy of contents, Nursery & Garden Industry Queensland accepts no liability for the information.

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## 1. Managing Myrtle Rust in the Australian Nursery Industry

Myrtle rust (*Uredo rangelii*) has the potential to infect all myrtaceous plants in both our built (gardens & landscape) and natural environments plus a range of industries (nursery production, timber, cut flower, etc) along the coastline of Australia. Under threat from this disease, if it becomes widely established, are a number of identified threatened native plant species across Australia plus a number of endangered wildlife habitat(s) that could have a major impact on our natural biodiversity.

In April 2010 Myrtle rust was detected in Australia in the Central Coast area of New South Wales (NSW). A national response was agreed to and a comprehensive surveillance and management program was initiated across NSW. By November 2010 more than 140 infected premises had been identified across NSW culminating in the disease being detected in Queensland in on the 27<sup>th</sup> December 2010.

On December 22<sup>nd</sup> 2010 the Myrtle Rust National Management Group agreed the disease was not technically feasible to eradicate. Due to the impact the disease could have across Australia it was further agreed to implement a structured management plan to limit the establishment of the pathogen within industries and the natural environment.

The development of this industry specific Myrtle Rust Management Plan, by the Australian Nursery Industry, is in direct response to the agreed national position in which the industry participated in developing. As a professional and responsible industry it is appropriate that all growers, wholesalers and retailers apply the relevant strategies to manage Myrtle rust as described in this plan.

Myrtle rust is a notifiable disease in all Australian jurisdictions requiring any detection of the disease be reported to the relevant state or territory biosecurity agency within 24 – 48 hours.

**Exotic Plant Pest Hotline: 1800 084 881**

This **Myrtle Rust Management Plan** has been developed for use by production nurseries and retailers of greenlife including garden centres, greenlife markets (wholesalers), big box hardware, supermarkets, chain stores, etc. The plan provides a detailed framework for growers and retailers to apply on-site in the management of Myrtle rust on plants from the Myrtaceae family. It is recommended that the industry apply this plan to **all** plants from the Myrtaceae family not only those that have been currently identified as hosts.

For further information on whole of property biosecurity in the nursery industry including on-farm programs such as BioSecure *HACCP* and the industry Biosecurity Manual go to [www.ngia.com.au](http://www.ngia.com.au) and follow the links.

**Note: State/territory laws and requirements including interstate movement protocols over-ride this Industry Myrtle Rust Management Plan.**

## 2. Myrtaceae Family – Genera

It is possible that all Genera listed may be susceptible to Myrtle rust under optimum conditions.

- Accara
- Acmena
- Acmenosperma
- Actinodium
- Agonis
- Alarizea
- Allosyncarpia
- Amomyrtella
- Amomyrtus
- Angasomyrtus
- Angophora
- Archirhodomyrtus
- Arillastrum
- Astartea
- Asteromyrtus
- Austromyrtus
- Backhousia
- Baeckea
- Balaustion
- Barongia
- Basisperma
- Beaufortia
- Blepharocalyx
- Callistemon
- Calothamnus
- Calycolpus
- Calycorectes
- Calyptranthes
- Calyptrogenia
- Calythropsis
- Calytrix
- Campomanesia
- Carpolepis
- Chamelaucium
- Chamquava
- Choricarpia
- Cleistocalyx
- Cloezia
- Conothamnus
- Corymbia
- Corynanthera
- Cupheanthus
- Curitiba
- Darwinia
- Decaspermum
- Eremaea
- Eucalyptopsis
- Eucalyptus
- Eugenia
- Feijoa (syn. Acca)
- Gomidesia
- Gossia
- Hexachlamys
- Homalocalyx
- Homalospermum
- Homoranthus
- Hottea
- Hypocalymma
- Kanakomyrtus
- Kania
- Kjellbergiodendron
- Kunzea
- Lamarchea
- Legrandia
- Lenwebbia
- Leptospermum
- Lindsayomyrtus
- Lithomyrtus
- Lophomyrtus
- Lophostemon
- Luma
- Lysicarpus
- Mallostemon
- Marlierea
- Melaleuca
- Meteoromyrtus
- Metrosideros
- Micromyrtus
- Mitranthes
- Mitrantia
- Monimiastrum
- Mosiera
- Myrceugenia
- Myrcia
- Myrcianthes
- Myrciaria
- Myrrhinium
- Myrtastrum
- Myrtella
- Myrteola
- Myrtus
- Neofabricia
- Neomitranthes
- Neomyrtus
- Ochrosperma
- Octamyrtus
- Osbornia
- Paramyrciaria
- Pericalymma
- Phymatocarpus
- Pileanthus
- Pilidiostigma
- Piliocalyx
- Pimenta
- Pleurocalyptus
- Plinia
- Pseudanmomis
- Psidium
- Purpureostemon
- Regelia
- Rhodamnia
- Rhodomyrtus
- Rinzia
- Ristantia
- Sannantha
- Scholtzia
- Seorsus
- Siphoneugena
- Sphaerantia
- Stereocaryum
- Stockwellia
- Syncarpia
- Syzygium
- Taxandria
- Tepualia
- Thaleropia
- Thryptomene
- Tristania
- Tristaniopsis
- Ugni
- Uromyrtus
- Verticordia
- Waterhousea
- Welchiodendron
- Whiteodendron
- Xanthomyrtus
- Xanthostemon

**NOTE:** The genera highlighted in yellow have had species, within these genera, return positive detections in Australia based on natural infection up to February 2011.

### 3. Myrtle Rust (*Uredo rangelii*)

Myrtle rust (*Uredo rangelii*), a plant fungal disease native to South America, is a member of the fungal complex known as the Guava rust (*Puccinia psidii*) group and, based on information from Florida, Hawaii and Brazil, Myrtle rust has a limited host range compared to that of Guava rust. The disease infects young, actively growing, emerging leaves, buds, flowers, fruit and shoots of plants within the Myrtaceae family. In Australia to date the most severe infections of the disease have been recorded on *Agonis*, *Tristania*, *Syzygium Jambos* and *Austromyrtus* species.

Myrtle rust may infect plants under a wide range of environmental conditions, however infection rates may be heightened when the following conditions are present:

- Soft new growth/tissue
- High humidity
- Free water on plant surfaces for 6 hours or more
- Night temperatures within 15 - 25°C
- Low light conditions including darkness (minimum of 8 hours) after spore contact can increase germination success
- Life cycle can be as short as 10 – 14 days (spore to spore)

Myrtle rust has the ability to complete its entire lifecycle on a single host plant. This pathogen will infect the plant and, over time as the disease spreads killing the leaves, in heavy infections will eventually kill the plant. As the plant drops dead leaves the pathogen will reinfect new growth limiting the plants ability to recover.

It is possible that as this disease establishes in Australia the host range may grow to include many of the internationally recorded plant species infected by Guava rust. The nursery industry **must** consider **all** myrtaceous species as potential hosts of Myrtle rust.

**Note:** Guava rust (*Puccinia psidii*) is also known as **Eucalyptus rust** and has caused heavy crop losses in the Brazilian hardwood industry through the decimation of planted Eucalyptus seedlings in the field. For identification purposes Myrtle rust and Guava rust are visually and symptomatically identical therefore identification tools are interchangeable.

**The general symptoms of Myrtle rust/Guava rust include:**

**(Myrtle rust generally attacks soft new growth including leaf surfaces, shoots, buds, flowers and fruit)**

- **Small purple flecks with a faint chlorotic (yellow) halo on leaf surfaces**
- **Large purple lesions as a result of flecks coalescing**
- **Purple lesions and bright yellow rust pustules (spores)**
- **Bright yellow rust pustules (spores) on underside of the leaf (young infection)**
- **Bright yellow rust pustules (spores) on both sides of the leaf (mature infection)**
- **Small and large purple lesions and leaf distortion (twisting)**
- **Older lesions can contain brown/grey rust pustules (older spores) on the lesions**

See photographs on pages 16, 17 and 18 of this plan.

(Photographs sourced from I&I NSW and DEEDI Queensland)

**Note:** Myrtle rust spores are believed to remain viable (under optimal conditions) for between 3 – 6 months.

#### 4. Known hosts of Myrtle Rust in Australia (as of February 2011)

Botanical Name	Common Name
<i>Acmena sp.</i>	Lilly pilly
<i>Agonis flexuosa</i>	Willow myrtle 'Afterdark' , 'Burgundy', 'Jeddas Dream'
<i>Austromyrtus inophloia</i>	see <i>Gossia inophloia</i>
<i>Backhousia citriodora</i>	Lemon-scented myrtle
<i>Backhousia myrtifolia</i>	Grey myrtle
<i>Callistemon viminalis</i> (now <i>Melaleuca</i> )	Weeping bottlebrush
<i>Callistemon salignus</i> (now <i>Melaleuca</i> )	Willow bottlebrush
<i>Callistemon</i> (now <i>Melaleuca</i> )	'St Mary MacKillop'
<i>Chamelaucium uncinatum</i>	Geraldton wax
<i>Choricarpia leptopetala</i>	Brown myrtle or Rusty turpentine
<i>Eucalyptus agglomerata</i>	Blue-leaved stringybark
<i>Eucalyptus deanei</i>	Mountain blue gum or Deane's gum
<i>Eucalyptus pilularis</i>	Blackbutt
<i>Eugenia reinwardiana</i>	Beach cherry
<i>Gossia gonoclada</i> (syn <i>Austromyrtus</i> )	Angle-stemmed myrtle
<i>Gossia inophloia</i> (syn <i>Austromyrtus</i> )	'Aurora' & 'Blushing Beauty' (syn. <i>Austromyrtus inophloia</i> )
<i>Lenwebbia prominens</i>	Southern velvet myrtle
<i>Leptospermum rotundifolium</i>	Round-leaved tea tree
<i>Lophomyrtus bullata</i>	'Rainbow's End'
<i>Lophomyrtus x ralphii</i>	'Red Dragon', 'Black Stallion', 'Krinkly'
<i>Melaleuca alternifolia</i>	Tea tree
<i>Melaleuca quinquenervia</i>	Broad-leaved paperbark
<i>Melaleuca linariifolia</i>	'Claret tops'
<i>Metrosideros collina</i>	'Tahiti' and 'Fiji'
<i>Rhodamnia maideniana</i>	Smooth scrub turpentine
<i>Rhodamnia rubescens</i>	Scrub turpentine
<i>Rhodamnia whiteana</i>	White malletwood
<i>Rhodomyrtus psidioides</i>	Native guava
<i>Syncarpia glomulifera</i>	Turpentine
<i>Syzygium anisatum</i>	Aniseed myrtle
<i>Syzygium apodophyllum</i>	Rex satinash
<i>Syzygium australe</i>	'Meridian Midget'
<i>Syzygium jambos</i>	Rose apple
<i>Syzygium luehmannii</i>	Small-leaved lilly pilly, riberry
<i>Syzygium luehmannii</i> x <i>Syzygium wilsonii</i>	'Cascade' (lilly pilly)
<i>Tristania neriifolia</i>	Water gum
<i>Uromyrtus lamingtonensis</i>	
<i>Xanthostemon chrysanthus</i>	Golden penda

## 5. Fungicide Treatment

For the treatment of plants (Myrtaceae family) the industry has access to an Emergency Permit (**PER12156**) that allows a range of fungicides to be applied for the management of Myrtle rust. Therefore if you intend to treat plants with a fungicide you must have a copy of this permit on-site and you must use the application rates as outlined in the permit. You can download the permit by going to the APVMA website ([www.apvma.gov.au](http://www.apvma.gov.au)) and click on 'Permits' and follow the prompts.

The table below identify's the various fungicides on the permit plus others with existing registrations and lists the '**Fungicide activity**' that will assist in selecting the appropriate product. The '**Chemical group**' is to ensure that an effective rotation program (see 5.2 below) can be applied on-farm if a business intends to have a standard fungicide strategy for the management of Myrtle rust.

### 5.1 Fungicide Table:

Fungicide trade name	Active constituent	Fungicide activity	Chemical group (Mode of Action)	Minimum re-treatment interval between consecutive applications
BAYFIDAN 250 EC FUNGICIDE (PER12156)	TRIADIMENOL	Systemic, curative and protectant	3	14-21 days
SAPROL FUNGICIDE (PER12156)	TRIFORINE	Systemic, slightly curative and protectant	3	7 days
IMTRADE MANCOZEB 750 DF FUNGICIDE (PER12156)	MANCOZEB	Non-systemic protectant	M3	7 days
AMISTAR 250 SC FUNGICIDE (PER12156)	AZOXYSTROBIN	Systemic, slightly curative and protectant	11	14-21 days
COPPER OXYCHLORIDE (PER12156)	COPPER OXYCHLORIDE	Non-systemic protectant	M1	7-14 days
PLANTVAX 750 WP FUNGICIDE (PER12156)	OXYCARBOXIN	Systemic, curative and protectant	7	14 days
TILT 250 EC FUNGICIDE (PER12156)	PROPICONAZOLE	Systemic, curative and protectant	3	7 days
BRAVO (Registered)	CHLOROTHALONIL	Non-systemic, slightly curative and protectant	M5	7 – 14 days

### 5.2 Myrtle Rust Fungicide Treatment Rotation Program (Production/Propagation)

Crop Situation	Fungicide (Fortnight 1)	Fungicide (Fortnight 2)	Fungicide (Fortnight 3)
Stock receival	Bayfidan	Plantvax	Bayfidan
Propagation	Bayfidan/Tilt	Mancozeb/Copper/Bravo/Amistar	Plantvax



Growing on (Low level risk)	Bayfidan/Tilt or Plantvax	Mancozeb/Bravo	Copper/Bravo
Growing on (Medium level risk)	Bayfidan/Tilt or Saprol	Mancozeb/Copper/Bravo/Amistar	Plantvax
Growing on (High level risk)	Bayfidan	Mancozeb/Copper/Bravo/Amistar	Plantvax

**NOTE:** Test fungicide(s) on a sample of the crop to ensure the product is not phytotoxic to your plant species before batch treatment.

### 5.3 Fungicide Application

Applying fungicides to manage Myrtle rust will require the appropriate application equipment is available to ensure the chemical is delivered to the target crop within the acceptable parameters as defined by industry best management practice. The aim of using fungicides to manage Myrtle rust is to ensure the necessary coverage is achieved that allows the fungicide to do its job. Generally a systemic fungicide has some room for error due to the ability of the plant to take the fungicide up and hold it in plant tissue and translocate it throughout the vegetative material. Protectants such as Bravo, copper and mancozeb provide a “protective” film covering the plant surface which requires greater precision in the delivery technique particularly in achieving contact with the underside of vegetative material.

The following list identifies the key aspects that are critical for successful fungicide treatment:

- Personnel applying fungicides appropriately trained (e.g. ChemCert Certified)
- APVMA Permit (**PER12156**) available on-site (defines fungicide rate)
- Fungicide(s) to be applied within “best before” or “use by date”
- Appropriate Personal Protective Equipment available
- Signage advising staff not to re-enter treated areas before designated re-entry period
- Re-entry period guidelines (if not on Label) are: minimum 24hr’s, if possible 48 hr’s
- Ensure overhead irrigation is withheld for approximately 6 - 12 hours after treatment
- Application equipment is appropriate for the development of droplets that are within 150 – 250 microns such as:
  - Hydraulic handguns/booms fitted with either solid or hollow cone nozzles
  - Hydraulic application equipment rated at 600kpa or higher
  - Three point linkage/knapsack misters are operated at correct speeds
  - All equipment regularly calibrated
- Use a chemical surfactant (wetter/sticker) if recommended on the product label
- Test fungicide(s) on a sample of the crop to ensure the product is not phytotoxic to your plant species before batch treatment.

## 6. On-site Biosecurity Actions

Currently (February 2011) Myrtle rust is confined to New South Wales and Queensland and as such it is important that businesses in **all** states and territories, retail, wholesale and production, maintain the highest plant health standards to ensure this disease is either suppressed or not introduced. Any business purchasing, or has sourced, Myrtle rust host plant material from an

outside source **must** survey their stock to ensure freedom from the disease. Other businesses with host plants are advised to maintain a structured monitoring program (weekly) to ensure they remain free of the disease.

**Myrtle rust can move across the landscape and within a production system by:**

- **Vegetative material (alive or dead)**
- **Air movement of spores**
- **Human assisted movement (spores on clothing/vehicles/containers/etc)**
- **Water splash from rain and irrigation**
- **Animals both native and domestic**

The following simple strategies should be applied (where possible) across all businesses growing/selling Myrtle rust host material (myrtaceous species). It is further recommended to consider this program for all plants within the Myrtaceae family:

**6.1 Production Nursery (including propagation)**

- Ensure a high standard of awareness of the disease at all staff levels
- Advise staff to avoid any plant contact prior to arriving at work
- Have on-site disease (Myrtle rust/Guava rust) identification information for all staff
- Train staff on disease identification & good hygiene practices (see State biosecurity websites and Nursery Paper December 2004 Issue No: 11 at [www.ngia.com.au](http://www.ngia.com.au))
- Disinfest all equipment/vehicles that move off-site and return to operate within the production area
- Limit the access of people (visitors & staff) to your production areas
- Implement a hygiene protocol for essential visitors (contractors, etc) to production areas including awareness of previous work sites, inspection of clothing/tools, etc and if required provide disposable overalls while on-site
- Restrict all non-business vehicles from entry to production areas, disinfest if required on-site
- Remove myrtaceous plants from driveways and carparks or prune to avoid possible visitor contact
- Consolidate all myrtaceous plant species within a defined area on-site away from native or landscape planted myrtaceous plant species and avoid direct exposure (buffer) to the prevailing winds of the season
- Allocate specific staff to manage all myrtaceous species
- Source myrtaceous plant material from known professional growers (e.g. NIASA Accredited)
- Request **all** suppliers of myrtaceous plant material provide evidence that they are adhering to this **Myrtle Rust Management Plan** (see attached declaration page 15)
- Inspect and treat (curative fungicide) imported myrtaceous species prior to incorporating into growing areas (7 days and re-inspect). It is recommend this be applied irrespective of the source (**see Sampling Protocol below**)
- **Inspect all myrtaceous species prior to despatch (see Sampling Protocol below)**
- Monitor all myrtaceous plant species weekly across growing areas for disease symptoms (particularly inspect areas of crop that have high humidity e.g. centre of batch and on the side exposed to prevailing winds) (**see Monitoring Protocol below**)
- Ensure growing areas remain free of all waste vegetative material

- Periodically (monthly) survey myrtaceous species growing on-site or along property boundaries/roads/etc. Pay particular attention to plants located upwind based on the most common prevailing wind direction of the season
- **Implement a fortnightly fungicide treatment program across all myrtaceous plants (see recommended program(s) Section 5.2)**
- Treat with a disinfectant (e.g. copper) the growing area upon the completion of the crop growing cycle before placing a new crop down on the production bed
- Dispose of all extraneous vegetative plant material from crop management such as pruning, detailing or from natural desiccation via bulk waste, composting or deep burial
- Assess irrigation system and timing to ensure plant surfaces are dry within a short period (less than 6 hours) after irrigation. Avoid irrigating late afternoon which allows water to sit on surfaces for periods of 6 hours or more during the night. Consider installing drip/capillary or other under canopy irrigation system to myrtaceous plant species
- Access industry guidelines such as NIASA and **BioSecure HACCP** for guidance in developing monitoring/surveillance/inspection programs and recording templates.

## 6.2 Propagation (specifics)

### As above plus:

- Maintain high health practices in propagation (surface/implements/equipment disinfection, staff hygiene, etc)
- Staff to wash hands before commencing work in propagation area (start of day/after breaks/etc) using a recognised hand sanitation product
- Propagation staff to undertake any field activities at end of day and not to re-enter propagation area.
- If possible provide staff with clothing or coveralls (e.g. disposable overalls) for moving outside propagation into production areas if required
- Avoid using adsorbent surfaces such as timber, cement board, fibro, etc as propagation work surfaces unless covered with 200 micron thick black plastic (replace when cut/punctured/damaged)
- Regularly disinfest propagation surfaces throughout the day at various points such as upon returning from a break, a change of species or batch
- Disinfest all items including surfaces using a recognised industry disinfectant such as:
  - Quaternary ammonium (e.g. PathX, Sporekil, etc)
  - Combination of 70% Methylated Spirits and 30% water
- **Avoid sourcing vegetative propagation material from myrtaceous plant species off-site**
- Ensure **off-site** motherstock for **non-myrtaceous** plant species are inspected and not located within 10m of myrtaceous plants
- Prior to taking vegetative propagation material from **off-site** motherstock survey the area and inspect all myrtaceous plants for signs of Myrtle rust
- Motherstock must be monitored and inspected at weekly intervals
- **Implement a fortnightly fungicide treatment program across all myrtaceous motherstock (see recommended program(s) Section 5.2)**
- All myrtaceous vegetative cuttings should be dipped in a bath containing a recognised disinfectant prior to sticking such as diluted chlorine, a specific quaternary ammonium (PathX/Sporekil/etc) that has low phytotoxicity or an approved fungicide. **NOTE:** Test on a sample to ensure the product is not phytotoxic to your plant species
- Consolidate all myrtaceous plant species within propagation houses (dedicated house) and hardening off/growing areas
- Monitor and inspect struck cuttings on a weekly cycle (see Monitoring Process below)

- **Implement a fortnightly fungicide treatment program across all myrtaceous plant species in propagation houses and hardening off/growing areas (see recommended program(s) Section 5.2)**
- Treat with a disinfectant (e.g. copper) the growing area upon the completion of the crop growing cycle before placing a new crop down on the propagation bed/bench and production bed

### 6.3 Greenlife Markets/Retailers

- Ensure a high standard of awareness of the disease at all staff levels
- Advise staff to avoid any plant contact prior to arriving at work
- Have on-site disease (Myrtle rust/Guava rust) identification information for all staff
- Train staff on disease identification & good hygiene practices (see State biosecurity websites and Nursery Paper December 2004 Issue No: 11 at [www.ngia.com.au](http://www.ngia.com.au))
- Restrict all non-business vehicles from entry to greenlife stocking areas
- If possible remove/prune myrtaceous plant species from carparks, driveways, etc that could come into contact with staff and customers or could overhang greenlife stock
- If possible allocate specific staff to manage all myrtaceous species
- Request all suppliers of myrtaceous plant species to certify the plant material is grown under this industry **Myrtle Rust Management Plan (see declaration template page 15)**
- **Inspect all plant material at receival point with a close inspection of all myrtaceous plant species (see Sampling Protocol below)**
- Consolidate all myrtaceous plant species within a defined area on-site away from native or landscape planted myrtaceous plant species and avoid direct exposure (buffer) to the prevailing winds of the season
- Keep all areas stocking myrtaceous plant species free of waste vegetative material such as leaves/flowers/fruit etc dropped by plants
- Periodically, if possible, apply a recognised disinfectant treatment at monthly intervals over holding area(s) where myrtaceous plant species are stocked/placed/held
- Conduct weekly monitoring inspections of all myrtaceous plant species (**see Monitoring Protocol below**)
- Periodically (monthly) survey myrtaceous species growing on-site or along property boundaries/roads/driveways, etc. Pay particular attention to plants located upwind based on the most common prevailing wind direction of the season
- Dispose of all extraneous vegetative plant material from crop management such as pruning, detailing or from natural desiccation via bulk waste, composting or deep burial
- Have staff inspect all myrtaceous plant species at paypoint(s)
- Assess irrigation system and timing to ensure leaf surfaces are dry within short period after irrigation. Avoid irrigating late afternoon which allows water to sit on surfaces for periods of 6 hours or more during the night. Consider installing drip/capillary or other under canopy irrigation system to myrtaceous plant species
- Access industry guidelines such as NIASA and **BioSecure HACCP** for guidance in developing monitoring/surveillance/inspection programs and recording templates

## 7. Monitoring and Inspection Sampling Protocol

### 7.1 Monitoring Process

The following table provides growers with the number of plants required to complete an appropriate crop monitoring plan. All aerial parts of the selected plant must be inspected

including upper and lower surfaces of leaves with a keen focus on young growth, buds, flowers, etc.

### Crop Monitoring Process

Enter each block or bench of plant material looking for abnormal plant symptoms
Walk at random through the area in a zigzag pattern
Take at least 10 minutes to inspect 10 to 20 plants or tube/plug trays per 100m <sup>2</sup> of production area
Inspect the tops and bottoms of leaves/stems/buds/fruit looking for any direct evidence of the disease
Inspect the entire plant if it has six or fewer leaves
With larger plants, select six leaves from all parts of the plant (upper, middle, lower) and examine them individually.
Inspect the length of all stems and branches for insects, mites, and disease symptoms
During individual plant inspection, strike the foliage over a white sheet of paper or a paper plate to dislodge spores for easier viewing
If a suspect infection is identified either leave it in-situ or place the plant in a plastic bag (if at dispatch) and contact the relevant state/territory biosecurity agency.
Record on the 'Crop Monitoring Record' sheet (see BioSecure HACCP) relevant monitoring information
Record the minimum and maximum temperatures and reset the thermometer
Observe any situational problems such as malfunctioning sprinkler heads
Using an identification guide, identify any symptoms observed.
Routinely inspect growing areas and remove alternate hosts and reservoirs of disease and insect vectors, including weeds, crop residue, and old plants that will not be marketed.

### 7.2 Sampling Process

The following tables provide growers with the number of plants required to complete an appropriate sample size for in-field and consignment inspections. All aerial parts of the selected plant must be inspected including upper and lower surfaces of leaves with a keen focus on young growth.

#### Sampling Methodology

The plants, cartons, trays or containers forming a consignment should be inspected as close as practicable and not more than 48 hours prior to the time of dispatch
Before undertaking the inspection the Nursery Manager will determine the sampling to be applied to the consignment as per below methodology.
Depending on the size of the consignment one of the two sampling methods (below) may be used
The number of plants/ cartons/trays/containers selected for inspection must be chosen at random.

#### Sampling method

Number of Plants in Consignment	Number of Plants to be inspected/sampled
1 to 20	All plants

21 to 200	A minimum of 20 plants
200 or more	20 plants plus 2 plants of each 100 thereof

OR

CONSIGNMENT	SAMPLE SIZE
Number of cartons/trays/containers forming the consignment	Number of cartons/trays/containers to be inspected/sampled
2 - 15	2
16 – 50	3
51 – 150	5
151 – 500	5
501 – 3200	8
3201 AND OVER	13

**NOTE: The Australian Nursery Industry has a complete guide for on-farm biosecurity protocols and procedures (BioSecure HACCP) available from state associations. Information on sterilisation, disinfestation, sanitation, quarantine, monitoring and inspecting, etc is available in this concise manual.**

## 8. Interstate Movement Controls

Since early May 2010 there have been various movement controls put in place by a number of state and territory plant health agencies to manage the real or perceived risks associated with the movement of host plant material. The following table summarises the status of current Myrtle rust movement controls by jurisdiction as at February 2011:

### Movement Controls February 2011

Jurisdiction	Myrtle Rust Movement Controls
Queensland	Restrictions on Myrtaceous plants from an infected jurisdiction
New South Wales	Pest Quarantine Area (Gosford/Wyong)
Victoria	Restrictions on Myrtaceous plants from an infected jurisdiction
South Australia	Restrictions on Myrtaceous plants from an infected jurisdiction
Northern Territory	Restrictions on Myrtaceous plants from an infected jurisdiction
Western Australia	Restrictions on Myrtaceous plants from <b>all Australian</b> jurisdictions
Tasmania	Restrictions on Myrtaceous plants from <b>all Australian</b> jurisdictions

**Note:** WA and TAS will **not** accept plants of the Myrtaceae family irrespective of treatment.

### State/Territory Biosecurity Agency Contact Numbers:

Queensland – 07 3239 3980

Western Australia - (08) 9334 1800

South Australia - 1300 666 010

Victoria - 13 61 86

Tasmania - (03) 6233 3352

Northern Territory - (08) 8999 2118

New South Wales - 1800 084 881

**NOTE:** Any business despatching Myrtle rust host material interstate must follow the import or movement controls of the receiving jurisdiction.



# Myrtle Rust Management Plan Declaration

**Business Name:**.....

**Address:**.....

**Telephone:**..... **Email:**.....

**Invoice Number:**..... **Date:**.....

I the undersigned declare that ..... has implemented the Australian Nursery Industry **Myrtle Rust Management Plan** (the plan) and is applying all relevant aspects of the plan to all Myrtaceous plant species grown on-site. All myrtaceous plants in this consignment (as per Invoice) have been treated under the plan.

..... has applied the following protocols of the plan to ensure the risk of receiving/introducing and/or distributing Myrtle rust is reduced and managed to the best of our ability.

**Note:** (Insert business name in the above blank fields)

PROTOCOL IMPLEMENTED	N/A	Y/N	PROTOCOL IMPLEMENTED	N/A	Y/N
Myrtaceous plant material is imported onto this site(s)			Myrtaceous plant material propagated is sourced on-site		
All myrtaceous plant material is propagated and grown on-site(s) (no imported material)			Myrtaceous plant material propagated is sourced off-site		
All myrtaceous plant material imported is accompanied by this Declaration from suppliers			All myrtaceous plant material propagated comes from Motherstock inspected and treated as per the plan		
All myrtaceous plant material imported is inspected upon receipt by trained personnel			A sound hygiene system has been implemented across all aspects of myrtaceous plant production		
All myrtaceous plant material imported is treated with a curative fungicide upon receipt			A sound waste disposal system for greenlife residue is in place		
All myrtaceous plant material grown is monitored & inspected at weekly intervals			Visitor vehicles are denied access to production area		
All myrtaceous plant material grown is treated at fortnightly intervals as recommended under the fungicide program in the plan			A hygiene system is in place for essential visitors to the production area		

.....

**Name**

.....

**Signature**



Photographs sourced from I&I NSW and Qld DEEDI





