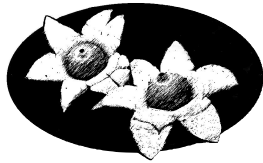


THE QUEENSLAND MYCOLOGIST



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The Queensland Mycological Society

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Society Objectives

The objectives of the Queensland Mycological Society are to:

1. Provide a forum and a network for amateur and professional mycologists to share their common interest in macro-fungi;
2. Stimulate and support the study and research of Queensland macro-fungi through the collection, storage, analysis and dissemination of information about fungi through workshops and fungal forays;
3. Promote, at both the state and federal levels, the identification of Queensland's macrofungal biodiversity through documentation and publication of its macro-fungi;
4. Promote an understanding and appreciation of the roles macro-fungal biodiversity plays in the health of Queensland ecosystems; and
5. Promote the conservation of indigenous macro-fungi and their relevant ecosystems.

Queensland Mycologist

The *Queensland Mycologist* is issued quarterly. Members are invited to submit short articles or photos to the editor for publication. Material can be in any word processor format, but not PDF. The deadline for contributions for the next issue is **30 June 2015**, but earlier submission is appreciated. Late submissions may be held over to the next edition, depending on space, the amount of editing required, and how much time the editor has. Photos should be submitted separately at full-size to allow flexibility in resizing and cropping to fit the space available while minimising loss of quality. Authors who have specific preferences regarding placement of photos should indicate in the text where they want them, bearing in mind that space and formatting limitations may mean that it is not always possible to comply. Material from published sources may be included if that complies with copyright laws and the author and source are properly acknowledged.

Membership

Membership of QMS is \$25 per annum, due at the beginning of each calendar year, and is open to anyone with an interest in Queensland fungi. Membership is **not** restricted to people living in Queensland. Membership forms are available on the website, <http://qldfungi.org.au/>.

Could members please notify the membership secretary (memsec@qldfungi.org.au) of changes to their contact details, especially e-mail addresses.

Cover photo: *Clavulinopsis* sp., photographed by Glenda Walter on the Bellthorpe Foray in March. See page 5 for Glenda's report.

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Contents

QMS calendar	4
Editor's comments	4
Bellthorpe foray, March 27 – 29, 2015	5
How many fungi are there?	6
<i>Cordyceps</i> – Another way of Living	7
<i>Penicillium coccotrypicola</i>	8
The culinary delights of a local fungus	9
Myrtle rust and sooty mould	10
Beyond the Seed	13

QMS Activities

Meetings

Meetings are held in the F.M. Bailey Room at the Queensland Herbarium, Mt Coot-tha, commencing at 7pm on the second Tuesday of the month from February (no January meeting), unless otherwise scheduled. Check the website for details and any changes. There will be 3-4 guest speakers invited during the year and other meetings will be informal. Suggestions from members for topics or names of potential speakers or talks will be welcome at any time. Please contact a member of the Executive.

To assist those unable to attend meetings, notes on the talks are included in the Queensland Mycologist wherever possible. However, the notes never do justice to the topic as they do not reflect the enthusiasm of the speaker or cover the discussion that follows. So remember, where possible it is better to attend the meetings, get the information first hand and participate in the invaluable information sharing opportunity.

Suppers are provided by volunteers. Check the website for details of the roster and if you are able to assist please contact the Secretary.

Forays

QMS hold regular forays during the first half of the year. The dates are nominally the 4th Saturday of the month, but actual dates may vary and additional forays may also be held.

Field trip details may change as a result of drought or other unforeseen circumstances. Check the website for changes.

Members are invited to suggest venues for additional forays. If you have any suggestions (and especially if you are willing to lead a foray), please contact Fran or another member of the Executive.

Workshops

QMS runs workshops in the second half of the year, when there is little field activity. The first workshop for 2015 will be on **Spore Prints and Pics**, scheduled for the 29th of August.

Members are invited to suggest topics for workshops. Send your ideas to Fran or Ronda (info@qldfungi.org.au).

Details will be included in future newsletters and on the QMS website.

QMS Calendar 2015

MONTH	MEETINGS	FORAYS/WORKSHOPS
May	12 th Members: Foray Reports: Bellthorpe (Glenda) Giraween (Vanessa)	23 rd Chermside Hills: John Wrench
June	9 th Speaker: AGM Dave Wood Fungal Genomics	13 th Linda Garrett Reserve: Pat Leonard
July	14 th Foray Reports & Fungimap report Members talks on items of interest (see website)	4 th Murrumba Downs: Bev Miles, Susie Webster
August	11 th Bring your microscope evening. Diana Leemon will be there to give advice on microscope setup & maintenance Foray report: Murrumba Downs	29 th Workshop: Spore Prints and Pics Leader: Fran Guard
September	8 th Members' evening	-----
October	13 th Sapphire McMullan-Fisher: <i>Fungi Allsorts</i>	29 th Members asked to submit ideas for workshop: ?SBF's: how to ID Small Brown Fungi or ?Beginners Workshop
November	10 th Workshop report. Members talks on items of interest (see website)	-----
December	8 th Christmas Party	Christmas Break

Editor's Comments

We have had some rather odd weather this year, with intense rainfall separated by dry spells in Brisbane. Rainfall has been even more fickle inland, and due to dry conditions the Lockyer Valley foray was cancelled. It has been even worse on the Granite belt, such that when rain did fall it was decided to cancel the Cunningham's Gap foray to allow members to take advantage of the rain with a foray to Girraween. Disruptions to the foray program are only a part of the reason for a late newsletter. My apologies for keeping you all waiting.

The Bellthorpe foray did go ahead however, and Glenda Walter has produced a report on that.

For something different, Vanessa Ryan has reported on an exhibition by Donna Davis, QMS member and

Brisbane Botanic Gardens artist-in-residence for 2013-14. Fran Guard produced an article on the culinary delights of *Lentinus sajor-caju* for the last newsletter that I missed at the time, and has added another on *Cordyceps*. Tony Young prepared an article on control of sooty mould and myrtle rust, and I report on the fungus found growing out of palm seeds at the Maroochy Wetlands foray in 2013, finally described as a new species of *Penicillium*.

There was a bit of a mix-up with one article being sent to an old "Editor" email address that no longer exists. Please check the most recent newsletter for current email addresses.

And finally a big thank you to the hard folks who read through various drafts and as usual picked up a stack of errors I either made or missed.

Bellthorpe Foray, March 27 - 29, 2015

Glenda Walter

Bellthorpe is "Top of the Range" in more ways than one. It lies on top of several ridges on the Conondale Range behind Woodford.



A tiny Ascomycete growing on cattle dung © David Holdom

15 forayers met on Friday 27 March to spend three days on the property of David and Wendy Clark. Some camped, and others were accommodated in the two guest cottages. Three walks in three different types of habitat were enjoyed by all. The property has been a dairy in the past, and still has pasture land for grazing a small herd of beef cattle. It also has a permanent creek with rainforest on the



Laetiporus sp. © Glenda Walter

surrounding hillsides, and wet sclerophyll forest as well. The Clarks have created walking tracks through all three areas, and because of the warmth and regular rainfall, fungi are found there in profusion after rain.

Friday's walk led us through pasture, across a creek, and back through paddocks to the house. Rain had fallen a week previously, but hot sunny days had dried things out except along the creek with its thickly treed banks. Of the thirty species recorded, our best finds here were a large clump of *Corioloopsis* and several species of tiny cup-shaped Ascomycetes growing on cow dung and on dead twigs.

The group returned to the Bellthorpe Hall to examine their finds. This old building, typical of country community halls, was ideal - large enough, and providing seating and tables and a kitchen for joint evening meals. Wayne Boatwright found five more species of fungi in the area around the hall to add to our list.



Trametes sp. © Glenda Walter

The Creek Walk on Saturday was more productive, with 51 species recorded. The fallen timber and leaf litter was still damp, and our chosen track this time led through rainforest. On a log near the creek, an undamaged, large, fresh specimen of a species of *Laetiporus* was found, and nearby a *Trametes* covered a large area on another dead log. Further along the narrow track, "Flame of the Forest",

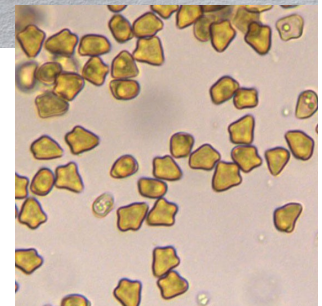
Clavulinopsis species, stood out clearly in the shadow of the trees. Lunch was consumed in a picnic area near the creek, delivered by the Clarks via quad bike. Back at the house, some relaxed in the shade, but Susie Webster discovered a very strange fungus growing on a dead *Pittosporum undulatum*. This was later identified as an immature *Ryvardenia campyla*. It was covered in maze-like pores, and oozed drops of red liquid.



Ryvardenia campyla © Susie Webster

The local people have formed the Bellthorpe Progress Association which has an interest in environmental matters, and in exchange for a large reduction in Hall hire were invited to a presentation on Saturday evening. Specimens were laid out on tables round the Hall, and very informally but very effectively, Patrick Leonard and Fran Guard gave an introduction to fungi and their importance, using our collections as illustrations. People asked questions, and some had brought photographs of fungi found on their properties. Supper and lots of informal talk followed.

Crucispora naucorioides and spores (below)
© P. Leonard



Our last morning was spent walking a new track on the Clark's recently acquired neighbouring property, this time much more open and passing through eucalypt forest with tall flooded gums, *Eucalyptus grandis*, on either side. I had feared that nothing would be found here, as it was quite open and had dried out since the last rain. But I'm glad to say that I was wrong – the sharp eyes of the QMS forayers found 25 species. These included Boletes – a patch of *Boletus* aff. *dispersus* with rich brown caps, *Boletus carramarus*, and a species of *Xerocomus*. Growing in an earth bank, *Calostoma fuscum* was a first for me, and a small sequestrate *Russula*, *R. galbana*, made Patrick a happy man. Susie found a small brown agaric which was later identified as *Crucispora naucorioides*, a genus unique in having cross-shaped spores. It has been reported twice in Queensland, and once each in New Zealand and Papua New Guinea.

The forecast storms held off, and the weekend was deemed by all to be a success, with 107 species found overall. Thanks to the cooks, who did a great job, to the Clarks for their hospitality, and the Bellthorpe Progress Association for their support.

How many fungi are there?

A recent paper in the highly prestigious journal *Science* suggests that previous estimates of 1.5-5.1 million fungal species are 1.5-2.5-fold too high. The mammoth study has 58 authors, including John Dearnaley.

<http://www.sciencemag.org/content/346/6213/1256688#aff-32>

and a more readable explanation can be found at

<http://www.ut.ee/en/news/ut-researchers-number-fungal-species-has-been-greatly-overestimated>

Cordyceps – Another Way of Living

Frances Guard



© Frances Guard

Most macrofungi are either recyclers (saprotrophic), or form mutual partnerships with plants (mycorrhizal). A few are parasitic on plants. However, some have a weird lifestyle that sees them parasitising insect larva. Many of these are very tiny and are only just visible to the naked eye. But a few are quite large and their fruiting bodies may be several centimetres in height.



© Frances Guard

The spores germinate, a germ tube penetrates the cuticle of the insect and mycelium then develops and spreads through the body of the host. The insect retains its recognisable form, but eventually succumbs, after which the fungus sends up a fruiting body, usually from the head of its victim. This is all that appears on the soil surface. It is often club or rod shaped, and may or may not be colourful.

There are said to be about 400 species of *Cordyceps* worldwide. They are Ascomycetes belonging to the family *Clavicipitaceae*.

On our recent foray in the open wallum woodland of Cooloolo National Park, we were fortunate to spot a small dusty pink fungus, which on extraction from the soil, was found to be attached to a cicada nymph. (That I.D. was only determined later.)

The fruitbody was club shaped, approx. 30mm long, with a definite fertile head and rather scaly stem. On the head were multiple small blood red ostioles, from which the spores are ejected.

Microscopic examination shows that *Cordyceps* have extraordinarily long spores, which break up into cylindrical segments.

The red colour, size and shape of our find, and its spores suggest that it is *Cordyceps menesteridis*, (F. Muell. & Berk. 1878),

which also goes by the name of *C. meneristitis*. Under the former name, there is only one collection in the Atlas of Living Australia, but under the second name there are about 15 collections, mostly from Victoria.



© Frances Guard



© Frances Guard

So it appears that this is a rare fungus. However, it may simply be that it is common but usually overlooked.

Editor's note: *Cordyceps* is now recognised as being an assemblage of several genera in more than one family. I am sure there are many species still to be discovered. *C. menesteridis* remains in *Cordyceps* and this is the name recognised in the recent revision by Sung *et al.*, which includes a key to genera. The paper is available at:

<http://www.cbs.knaw.nl/index.php/studies-in-mycology/295-studies-in-mycology-no-57>

Penicillium coccotrypicola

David Holdom

In the winter of 2010 I spotted a blue-grey fungus growing out of Bangalow palm (*Archontophoenix cunninghamiana*) seeds at Mapleton Falls, but was not in a position to work on it. I later saw it at Mt Tamborine, and Glenda Walter photographed it at Bellthorpe, so it seems to be widespread at least in southeast Queensland.

So it was with some excitement that I spotted a photo of this fungus in the report on the 2013 Maroochy Wetlands foray (see the September 2013 Newsletter).



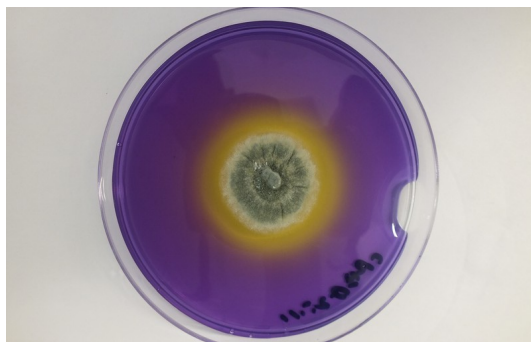
Penicillium coccotrypicola © Glenda Walter

Even better, Patrick Leonard was able to provide me with a couple of infested seeds, from which I isolated the fungus into culture. It turned out to be a *Penicillium*, but not one I could identify. Preliminary DNA analysis also indicated that it was new.

This fungus has now been described as *Penicillium coccotrypicola* Holdom, Y.P. Tan & R.G. Shivas, with the culture from the Maroochy material (BRIP 59608) as the holotype.

Traditionally, *Penicillium* taxonomy is based on morphology, and on growth on different culture media and at different temperatures, with such things as growth rate, growth form and production of acid (as shown by indicator dyes in the media) being recorded, but now DNA plays a critical role.

Diana Leemon kindly let me use her laboratory at the Ecosciences Precinct at Dutton Park for the culturing work. Yu Pei Tan did the DNA analysis in Roger



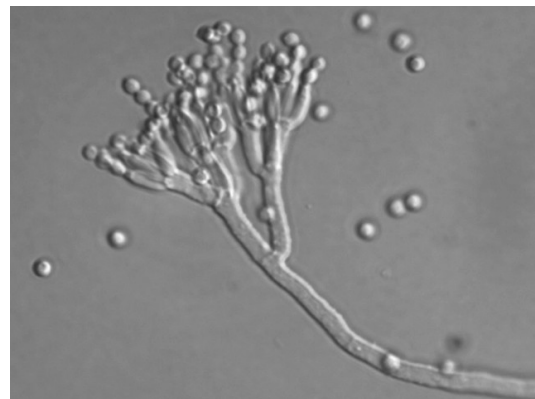
Acid production on creatine agar (yellow colour)
© David Holdom

Shivas' lab, also at the Ecosciences Precinct, and Roger used his considerable experience and expertise in describing microfungi to pull it all together, write the description, and give it a name.



Penicillium coccotrypicola producing synnemata on oatmeal agar. The colour differs from nature on most artificial media © David Holdom

Only a few of the many species of *Penicillium* produced synnemata (the "spikes" growing out of the seeds), so *P. coccotrypicola* is unusual. There is a synnematous species found on palm seeds in Hawaii, but it is quite distinct from *P. coccotrypicola*.



Conidiophores and conidia (spores) of *Penicillium coccotrypicola* © David Holdom

In another twist, Roger cut one of the seeds in half and found that the fungus was actually growing in the chambers created by a borer beetle. A sole specimen was found and identified by insect taxonomist Justin Bartlett as the palm seed borer, *Coccotrypes carpophagus*, from which the name of the fungus is taken. The beetle, while dead, was perfectly intact, so *P. coccotrypicola* is not an insect pathogen. The beetle belongs to the Scolytinae, or bark beetles, a subfamily of weevils. Members of that group are known to spread fungi into host trees. The fungi live in the wood (or in this case seeds) and are fed on by the insect in a symbiotic relationship, and that is very likely the case here.

The paper, a *Fungal Planet Description* in the journal *Persoonia*, is freely available at

www.fungalplanet.org/content/pdf/files/FungalPlanet318.pdf

The Culinary Delights of a Local Fungus

Frances Guard

Ever since I came to know *Lentinus sajor-caju*, I have been aware that it is edible. After all, its name means, in Indonesian, “vegetable that grows on wood”. I am always cautious to eat new fungi, and having watched it grow on our dead privet (*Ligustrum lucidum*), over the last ten years, and seen it become incredibly tough and leathery as it ages, I was not in a hurry to try it.

However, recently, I mentioned its edibility to a friend. I suggested that only the buttons would be palatable. He immediately tried a button raw, and proclaimed it very tasty. I tried one and had to agree.

Lentinus sajor-caju fruits several times a year in large numbers on our property. The fruit bodies develop very quickly from buttons to funnel shaped caps, which may attain a size of up to 150mm. They then last for several weeks – even months, eventually becoming mouldy and brittle before they fall off the dead trees. Finding ones of the right age and stage of development for the meal table is the key to this story. Often I find that they are already fully developed when I first notice them.

However, today I was lucky. Among the hundreds of fruit bodies was a good number of buttons.



© Frances Guard

We collected these, cutting the stem just below the (false) collar. At this stage the gills have barely developed, and the flesh is quite tender. After washing and patting them dry, I sliced them lengthwise.

I then fried a large clove of home-grown garlic in butter, added the mushrooms, and stir fried until they were soft. For extra flavour, I added a little



© Frances Guard

crumbled feta cheese (cream would be a suitable alternative), plus salt and pepper to taste.

We ate this as a side dish with our salad, but I think it would be a delicious accompaniment to any hot meal with vegetables.



© Frances Guard

A Google search tells me that *Lentinus sajor-caju* has been checked, along with another species of *Lentinus*, for its nutritional value. This work has been done in northern India, where these fungi are commonly eaten. The authors claim that not only does it have good levels of protein and carbohydrate, vitamins, carotenoids and minerals, but it also shows antioxidant properties and antibacterial activity against *Staphylococcus aureus* and *Vibrio cholerae*. (Singdevsachan).

Once again, there is always more to be learnt about fungi than we first imagine!

Reference: Singdevsachan, Sameer Kumar et al., “Nutritional and bioactive Potential of two wild edible mushrooms (*Lentinus sajor-caju* and *Lentinus torulosus*) from Similipal Biosphere Reserve, India”, *Food Science and Biotechnology* 22(1):137-145 (2013).

Myrtle Rust and Sooty Mould

Tony Young

At the recent meeting of the QMS (10th February 2015), I made some introductory remarks about both myrtle rust and sooty mould and these generated considerable interest. Since many of the QMS members are gardeners and also because I was given some encouragement to give the information I have to all the members, the result is this short article. I want to stress at the outset that this is not intended to be a comprehensive treatise on both problems. It is simply a summary of how I went about dealing with both diseases in the plants under my control.

My wife and I live on a 5.75 acre block at Blackbutt which mostly is covered by a light to dark loam based on granitic substrates. We have no water supply other than tanks and so we are very rain dependent. Over 25 years ago, we decided that we would like to utilise the land to give some financial return and after much thought, circumstances played out which resulted in the establishment of a small plantation designed to supply both flowers and foliage for auction at the Brisbane Flower Market. A number of different plants have been trialled, including species from *Grevillea* and *Melaleuca*, however the soil and climatic conditions have slowly forced a situation in which only three plants remain under extensive cultivation: one-sided bottlebrush (*Calothamnus quadrifidus*), Geraldton wax (*Chamaelucium uncinatum*) and fringed heath-myrtle (*Micromyrtus ciliata*). All three plants are members of the Myrtaceae, all are very hardy and can sustain periods of drought and all can be reasonably easily propagated by tip cuttings. I no longer purchase tube stock and propagate my own. I'd add here, that the variant of *Calothamnus* that I grow is not likely to be available in nurseries because of the unusual way in which I obtained my original large planting of the species, and the subsequent selection process that took place in which I steadily selected and propagated the most suitable variety for florist use.

One last small note I would make is that for a cultivation of the type that we have here on our five acres, you cannot simply walk away and just occasionally cut the material you want. I make small inspections of parts of the area at random to check on whether there are any problems and as a result picked up a small infection of cottony scale on a Geraldton wax. In the same way, I constantly check the shoots of the Geraldton wax for any signs of myrtle rust and the stems of the *Calothamnus* for sooty mould or large numbers of ants.

Sooty Mould

The Problem

Sooty mould is caused by a whole range of species within the Ascomycetes. Usually, it is disfiguring but not lethal to the plants on which it is occurring but severe infestation can stunt plant growth. It may be recurrent but it is treatable. Only one of our three plant species is affected, the *Calothamnus*, where it appears as heavily blackened stems and they therefore become unsaleable. My experience with these plants has been that if a sooty mould infection is left untreated, it progressively becomes worse, the new shoots become fewer and stunted and the plant goes into regression and may ultimately be killed. The readily visible problem is the sooty mould itself, but there are two underlying factors: a scale insect and small black ants. For a long time, I was unable to find the scale insects on the needle like leaves of the *Calothamnus*, however eventually I found them and once I knew what to look for, I have found these tiny scales on every plant that is being invaded by large numbers of ants. Not only do the ants make it unpleasant to harvest unaffected stems, they also spread the scale insects and thus the infected area. The ants harvest sugary secretions from the scale insects and spread the mould on their feet. It is therefore imperative to destroy both the ant and the scale if a sooty mould infection is to be controlled.

I have tried a material called Talon Ant Killer Gel which is smeared on the surface where ants are moving and my observations showed they fed voraciously on the poison, but this result did not completely destroy the colony, and of course, the scale remained. Spraying for the scales alone is not effective because the ants remain and since they have marked their trails, they soon return to the infected plant and replace the scales.

The Solution

Recently, I discovered a very simple and cheap solution to dealing with both sides of a sooty mould infection. First, the ants can be controlled very easily by means of a garden product that is currently available in the gardening departments of large chainstores. This product is called "Blitzem! Ant, Flea & Tick Killer" and it is supplied in a 600gm cylindrical package with a top dusting applicator. My initial use of it was to clear the area for about a 20 cm radius around the base of the infected plant so that soil was exposed. The material was then sprinkled sparsely around the stem base. The usage information strongly suggests minimal sprinkling so that you can see a fine layer has been produced but only very, very thinly. Perhaps a teaspoon full at most was used. The results were dramatic: the small black ants involved in the infection simply would not cross the area covered by the insecticide

and those caught in the area very rapidly moved to escape it. The material is not a dust and resembles very, very fine sugar grains. Best of all, it is unaffected by weather and has a field life of up to two months. My findings so far are that you don't have to remove the litter and just sprinkling it over the litter surface is just as effective, but make sure it is a thorough coverage and right up to the infected plant's base.

With the ants now under control, the next step was to deal with the scale. These turned out to be quite tiny and very closely appressed to the plant leaves out near the growth tips. The solution was to use a systemic insecticide so that the scale insects would ingest the toxin through their feeding. The chemical used was Malathion and directions for spraying and concentration are on the package when it is bought. A single spray may be all that is required, but I play safe and follow it up with a second spray a week later.

The results are extremely pleasing. After two weeks, ants are now absent from the previously infected plant, the sooty mould has nearly vanished and the plant is in an enormous surge of budding and shoot growth. Scale has vanished from the plant.

Myrtle Rust

The Problem

My understanding at the moment is that several years ago (April 2010), someone (currently unknown) in the central coast region of New South Wales, smuggled in some illegal and probably viable plant material from South America and that material was infected with myrtle rust, *Uredo rangelii*. Within 1-3 years the rust had spread virtually along the whole of the eastern coastline of Australia from at least Rockhampton in the north to Victoria in the south and had done considerable damage because our native flora had never had to have resistance to this particular pathogen previously. Infection can be seen as an eruption of small yellow pustules on the leaf or stem surface followed by wilt and tip death.

Infection by the fungus is through the plant surface and the rust is very "particular" in the set of climatic conditions under which it can establish an infection. There are optimum conditions under which the rust can infect a plant and these include a temperature of 20°C, 24 h leaf wetness, and a period of darkness. In other words, mild temperatures and wet leaves are ideal. As a result, one can expect rust infections in Blackbutt from about the end of October to the end of March. It then becomes too dry or too cold for the fungal spores to germinate and attack.

Whether or not the rust can infect a particular member of the Myrtaceae is a matter of "wait and

see". Some of our eucalypts appear to be immune, others only mildly attacked while others withstand rust attacks with difficulty. The same goes for any other members such as *Melaleuca*, *Callistemon*, *Tristania*, etc. etc. A search on the web will yield plenty of information, but a good starting point is:

<https://www.business.qld.gov.au/industry/agriculture/land-management/health-pests-weeds-diseases/weeds-and-diseases/identify-myrtle-rust>



Myrtle rust infestation on angle-stemmed myrtle (*Gossia gonoclada* = *Austromyrtus gonoclada*) in Chelmer (Brisbane). © David Holdom

As regards our own plants, we have found that *Micromyrtus ciliata* seems to be immune. I have never seen any infections on any of our 200 or so plants. *Calothamnus* is very unusual. The main body of the plant itself is apparently immune and even the very tender growth tips which could be expected to become infected, never show any signs of the fungus. There is never any wilt or dieback. The places where the rust is able to attack are the smooth and tender flower buds on the stems inside the plant. *Calothamnus* is unusual in that the flowers are produced on the middle of the stems inside the bushes rather than on the branch tips. Since these stems are never sold for their flowers, the buds are simply rubbed off and destroyed. My present hypothesis is that the fine, velvety layer of hairs on the surface of the leaves and buds protects them from infection.

The only problem plant for us is Geraldton wax which is highly susceptible to the fungus and is virtually an indicator plant. If myrtle rust is in an area, then Geraldton wax will be one of the first plants to be infected. We also have a small white flowered variety which is even more susceptible than the large flowered varieties, so keeping a close eye on the small white-flowered plants gives excellent indications. Oh, and of course, you can guess which wax flowers the florists especially like. Infection leads to tip death and the complete loss of flowers on that stem. The black unsightly results

also make any remaining flowers unsaleable.

This particular year (2015), there has been no rust on any of our plants thus far. It may be that the epiphytotic is slowly decreasing its intensity, but there is also the fact that there was a prolonged dry period leading up to this midsummer, and that will have made propagation conditions for the fungus very unsuitable in its far more humid areas on the coast. Our plantation will be constantly inoculated by spores blown in by the south easterly winds, but so far in 2015, I have seen no visible infections.

The Solution

During the winter months, there is no concern, however as summer approaches and if continual drizzly or rainy conditions persist with easterly winds, then there is need for inspection every couple of days. It is pointless to administer the sprays randomly and hope for the best, and my most successful results are from the inspections and immediately spraying once an infection is noted. This way, you may lose one or two stems, but you don't waste sprays and you can control the rest.

I use two fungicides, one of which is a surface protectant with a slight amount of systemic ability, and the other is a purely systemic fungicide. The surface spray is called Mancozeb and all directions are on the packet. It can be obtained at any good nursery. The systemic fungicide I use is one called "Plantvax". This is the most expensive of the chemicals and two years ago, a 500g container of the powder cost about \$130. I was only able to find that package at a plant nursery oriented gardening outlet over on the Sunshine Coast near Cooroy, but I am sure you may be able to find other outlets. The quantities used however, are quite small, so a 500gm package lasts a long, long time. There are at least two other systemic fungicides available, but I have never used them.

To use them most effectively, the two sprays should be rotated once you are trying to destroy an infection and prevent re-infection. Rotation also aims to prevent the fungus from building up a resistance to Plantvax. Mancozeb is a surface spray and should give you protection for about 10-14 days depending on rain. It is exceptionally good because so far, no fungus has been demonstrated to show resistance to the fungicide. Plantvax will give protection for 14-21 days. As you can see, once you have demonstrated rust infection is on the cards, you should use each spray in turn about once every two weeks until the summer humidity is over. My results with this combination have been quite effective.

Acknowledgement

My thanks to Fran who suggested this small paper

be put together. Also, I'd ask that if there are any errors or things that you think could be improved, please let me know.

Postscript

I can now add that I have a second systemic fungicide called Bayfidan. It comes in 1 litre containers but is very expensive at \$175 per litre. However, the solution is highly concentrated and that amount will last me a number of years. You rotate Bayfidan, Plantvax and Mancozeb over a 5 week period. Bayfidan is not only fungicidal it is also curative and infected plant tips seem to rejuvenate and begin to produce flower buds again.

Editor's note: Plantvax sounds very good to me from Tony's experience, but there are also other products registered for use on myrtle rust, though I cannot comment on their relative efficacy.

There are a number of minor use permits for these types of products, some of which may be easier to obtain for home use than Plantvax or Bayfidan.

Bear in mind that any use not on a label or permit is illegal, and you must comply with all label and permit requirements. To find permits, go to apvma.gov.au. On the right under search click "permits". Type "myrtle rust" into the text box and tick "Pest/purpose" and you should get a list of current permits. If a permit has expired you will not be able to download it. If you do use a permit, note the expiry date. If it expires check to see if it has been renewed (if so it will probably have a new number). If a permit has not been renewed you can no longer use it. However, check the label of any product mentioned in a permit because the manufacturer may have obtained registration, in which case its use against myrtle rust will now be on the label.

You can search for permits for other pests, diseases or weeds on the same site. Many myrtle rust permits apply nation-wide, but most permits are specific to one or a few states, and sometimes only a part of a state, or to specific situations. Make sure that the permit states that "persons generally" may use it. Some permits are restricted to people with specific training in pesticide application, or to specific professional groups such as government employees.

There are a number of similar products to Blitzem! Ant Flea and Tick killer. All contain 2g/kg of Bifenthrin (a synthetic pyrethroid) in a sand(?) base.

Note also that the trade name "Talon" is on a range of domestic-use products containing different active ingredients for different purposes, so make sure you get the ant gel.



Untitled, 2015, donna davis. [digital still - projection]

BEYOND THE SEED

Vanessa Ryan

Donna Davis, QMS member and Brisbane Botanic Gardens artist-in-residence for 2013-14, recently held her *Beyond the Seed* exhibition at the Richard Randall Studio, Mt Coot-tha Botanic Gardens. The mixed media installation creatively explored the complex symbiotic relationships between native plants and fungi.

Donna uses a mixed range of materials and media to represent connections and relationships within the natural world in a way which evokes curiosity and reflection. She believes that the art/science field provides a powerful catalyst to challenge our discourse, raise environmental awareness and promote the conservation of our ecology; by providing new ways of 'seeing' and creating new 'connections' in the mind of the viewer.

Beyond the Seed was a continuation of her 2013 residency project, *The Plant Room*. This time she investigated the hidden connections beneath our feet that impact the soil, and in turn, seed germination and plant health. It was a visual and tactile exploration of the fascinating world of fungi, with their mycelium networks and mycorrhizal associations that provide vital nutrient exchange between fungi and plants.

The exhibition featured large-scale, soft sculptures of fungus species which grow in similar conditions to the native plants that were the focus of *The Plant Room*. *Boletellus emodensis*, *Amanita pyramidifera*, *Amanita luteolovelata*, and *Clavaria miniata* have each been thoughtfully and carefully recreated in a manner which best represents key aspects of those particular species. To someone who knows a bit about our local fungi, the species are instantly recognisable – for example: the classic pyramidal warts of the *Amanita pyramidifera* and the wonderful shaggy cap and golden pores of *Boletellus*

emodensis. Donna's choice of fabrics for these soft sculptures alludes perfectly to the colours and textures of the fungi they represent. The immediate impulse is to touch the sculptures and explore their structure and, on doing so (yes, you *can* touch them!), some of the complexity of the fungus organism is revealed.

The free-standing sculptures filled the central display area of the intimate gallery area. The exhibition also included large-format digital images projected on one wall in a continuous loop. Donna created these digital images by merging and manipulating photographs of small, highly detailed sculptures she had crafted from resin and other materials.

A tube of woven copper wire (Viking Knitting) features in a number of the digital works in the exhibition. Donna uses a technique she describes as 'digital crochet', where she digitally replicates, resizes and positions images of the tube to form an intricate design strongly suggestive of a plant root or fungal mycelium system. A large, printed image of this complex structure was hung in pride of place on the main exhibition wall.

Also mounted on one of the walls was a series of four sculptural elements representing native plant seeds. As with all of Donna's creations, this piece was made primarily from recycled materials.

Donna is an imaginative and highly skilled artist. Her works are carefully designed and crafted, with many layers of research, experimentation and development behind them. This results in pieces which I find to be a successful and thought provoking fusion of art and science.

I think *Beyond the Seed* can best be summed up, however, by the simple and honest reactions of an elderly lady and a young child who entered the gallery just as I was leaving. At first they were hesitant, curious, unsure. This quickly turned to exclamations of wonder and smiles of delight.

The *Beyond the Seed* exhibition ran from March 21-29 and is now no longer on display. Hopefully this installation will have a few more exhibition opportunities over the coming year.

Donna will soon be starting on a new project with the working title: "Ipswich Fungi". This project will involve regular visits to the Purga Nature Refuge, home of the endangered Swamp Tea-tree, to document the fungi that grow in and around this species. The physical documentation she collects will be passed onto the Qld Mycological Society and Qld Herbarium and the visual stimulus and research will form part of a concept development for a new body of artworks. So watch this space!

Donna's website: www.donna-davis.org
<http://donnadavisartist.blogspot.com.au/>



Clavaria miniata, *Amanita pyramidifera*, *Boletellus emodensis*
Beyond the Seed, 2015, Donna Davis. Photo credit: Vanessa Ryan



Amanita luteolovelata (front), plant seeds (back). Beyond the Seed, 2015, Donna Davis. Photo credit: Vanessa Ryan



Detail mixed media installation - *Plectranthus habrophyllus* seed. Beyond the Seed, 2015, Donna Davis. Photo credit: Greg Harm



Boletellus emodensis Detail - Beyond the Seed, 2015, Donna Davis. Photo credit: Vanessa Ryan



Amanita luteolovelata, *Amanita pyramidifera*, *Boletellus emodensis* Detail Beyond the Seed, 2015, Donna Davis. Photo credit: Greg Harm



Artist Donna Davis with *Boletellus emodensis*. Beyond the Seed, 2015, Donna Davis. Photo credit: Vanessa Ryan