

Submission to LEGISLATIVE COUNCIL GOVERNMENT ADMINISTRATION COMMITTEE 'B' SUB COMMITTEE INQUIRY INTO BLUEBERRY RUST

Biosecurity Tasmania response and strategy to the 2016/7 blueberry rust incursion.

Tony Waites, Woodlea Nursery. Springfield, Tasmania. 13/10/2017

Summary

- **Biosecurity Tasmania needs to adopt a more comprehensive rust containment and eradication strategy to move towards eradicating blueberry rust from Tasmania.** This would include chemical treatment to manage active pathogen, and defoliation to decrease pathogen load in infected sites and the state as a whole.
- **Eradication does not necessitate a destruction of commercial blueberry orchards.** Infected plant destruction would be a last resort implemented only when other measures were not successful.
- **The industry needs to adopt practices which assist in controlling the spread of the disease.** Minimising host material through use of deciduous varieties, and ensuring a deciduous phase of 8 weeks through natural or chemical defoliation will provide a period where survival of living rust material is difficult if not impossible. Further, farm biosecurity measures can assist in minimising commercial blueberry plants becoming exposed to vectors of the rust spores.

Background

During the first blueberry rust incursion, in 2014, Biosecurity Tasmania (BT) adopted an eradication program which had at least functional eradication as its result. This involved destroying the infected plants at a number of farms. No further detections were observed for around 18 months. There is no information on whether the subsequent incursion was from new material, or residual spores.

Following the latest blueberry rust incursion in August 2016, BT chose a different response, deciding that eradication was impossible. The motivation for the change in strategy was initially not explained, and led to a great deal of bad feeling amongst independent growers. Following pressure from the Primary Industries Biosecurity Action Alliance (PIBAA), the head of BT, Lloyd Klumpp circulated the motivation for the policy of containment rather than eradication. It consisted of a clarification from DPI NSW regarding the work of Dr Rosalie Daniel, who presented her research to the Tasmanian Fruit Growers, a statement document from *Tasmanian Institute of Agriculture (TIA)*, and a summary from BT. Below is a summary of the position presented in each document.

1. *DPI NSW report, unauthored.*

This document was a clarification of the position of DPI NSW, since it was observed that people had taken a range of interpretations from the presentation of Dr Daniel, given to a Tasmanian fruit growers meeting. In the document it was acknowledged that Dr Daniel's findings indicated that defoliation of blueberry plants removed living host material for the rust spores, leading to the rust dying and resulting in short term eradication. They stressed however that the study only considered small plants, and didn't study long term efficacy of the approach. They stated further that defoliation of blueberry plants could protect an uninfected farm from infection, but that "there is no published evidence to support defoliation as a measure to eradicate blueberry rust in large scale infections". They state that they have not conducted experiments of greenhouse and the field, to consider the

efficacy in commercial operations. They also stated that based on experience with other rusts such as Myrtle rust, total eradication of blueberry rust in Tasmania is highly unlikely.

2. *Tasmanian Institute of Agriculture (TIA) Scientific advice, unauthored, 27/7/17*

The TIA report argues that permanent eradication of blueberry rust from Tasmania is not feasible due to the cost of surveying all potential host plants, and the chance of missing possible infections based on spores being invisible until visible symptoms present themselves. They also argue that functional, short term eradication is not possible, stating that the incursion has “advanced beyond the stage when it can be contained”. They state that the two factors precluding eradication are the fact that rust spores are extremely mobile, being rapidly dispersed by the wind and other vectors such as worker clothing, and also that the spores can proceed through multiple generations of asexual reproduction per year. Finally they state that the possibility of future incursions from interstate causing re-infection means any effort at eradication would be a waste of resources.

3. *Biosecurity Tasmania review of current response.*

This document described how BT considered the feasibility and economic impact of eradication and containment strategies, based on the advice in the two previous reports. They conclude that there is a low likelihood that eradication will succeed, and that eradication will have a major impact on the industry and individual growers. They found that detection of the rust is difficult in colder months, as the plants don't show symptoms. Also they mentioned that there is disagreement over the risk of spread to other host species.

They believe that the impact of the rust being present in the state is manageable using appropriate fungicides, and that market access will be possible to manage by fruit treatment or certified disease freedom.

Their belief is that defoliation strategies are unlikely to work in a commercial setting as it would be impossible to achieve 100% leaf free plants through chemical defoliation or natural defoliation of deciduous varieties.

Finally, they state that a containment approach does not preclude future eradication, that containment is unlikely to be successful, but will provide time to implement disease management strategies.

4. *Discussion with Peter Cross at blueberry farm biosecurity workshop, Exeter, 15/9/17.*

Peter Cross is an expert plant pathologist at Biosecurity Tasmania, has worked in the field for 25 years, runs 3 labs, and sits on state and national plant biosecurity working groups and committees. Within the public discussions during the Blueberry farm Biosecurity Workshop, held at Exeter Recreation centre, I personally asked Mr Cross a number of questions regarding the nature of the rust and impact of different strategies, and he answered in an open and honest manner. My questions and his responses are summarised below.

- I first asked if defoliation of blueberry plants for a period of 8 weeks was likely to kill the pathogen causing blueberry rust, based on the current evidence from Dr Daniel's study. He said that it was likely. We agreed that more work should be done to understand further the effectiveness of this approach, including the more long term results.
- I then asked whether taking a defoliation strategy, even if eradication fails, would increase the efficacy of containment of the pathogen. He agreed that defoliation would increase

markedly the control of the pathogen, and decrease the chances of further spread of the disease from infected sites.

- I presented the hypothesis that growing evergreen varieties provides a source of host tissue for the rust pathogen year round, making control of the rust much more problematic. He agreed with this, since it allows the rust to live and proliferate without the natural control afforded by natural defoliation and rust suppression during winter.
- I also suggested that growing blueberries in tunnels provides a warmer and more humid environment, providing optimal conditions for growth of rust spores, decreasing the efficacy of all control measures, including the effects of natural suppression by climate, and increasing the risk of spread of the disease. He agreed that this was the case.

Response to the BT position and supporting material

1. *Response to DPI NSW report of clarification.*

The only scientific evidence contained in the report is the findings of Dr Daniel, showing that defoliation can achieve at least short term eradication of blueberry rust in infected plants.

Defoliation doesn't have the economic impact on an enterprise as removing whole plants. The DPI have not conducted further trials to consider the defoliation approach. This does not mean that the approach would not be effective. Surely such trials need to be undertaken as a matter of urgency. Finally, DPI NSW refer to their past experience and refer to Myrtle rust. The obvious difference between Myrtle rust and blueberry rust is the host plant. Myrtle rust utilises a host in the Myrtaceae family, and in NSW as in Tasmania, there are a multitude of suitable hosts, including all Eucalypts (gum trees), Melaleucas (paperbarks), Leptospermums (tea trees), and a large number of exotic species. Spread of this rust in NSW is also aided by warmer temperatures. Blueberry rust host plants consist of blueberry plants, other species within Ericaceae, including rhododendrons, as well as Tsuga (hemlock, a conifer). The range of host species is less wide ranging, and in Tasmania the rust is yet to be seen in anything other than blueberries. Also, Tasmania's colder winters make control or eradication of the rust easier, as the rust struggles to survive in a cold environment.

2. *Response to TIA*

I can understand that the process of attempting full eradication has financial implications, and impacts individual growers. The fact is that adopting a containment strategy will also have a huge impact on a large number of individual growers. The possibility of market exclusion will expose smaller growers to financial strain, potentially rendering their business unviable. Further, organic growers have limited options for chemical treatment using fungicides, making the present containment approach most likely to impact their business, possibly leading to the loss of their accreditation, removing their market advantage, which they have made huge investment to obtain. Self-pick enterprises are hugely exposed to disease in a climate where the rust is allowed to exist in the state, with more limited opportunities to control disease infection through farm biosecurity measures.

The statement by TIA that the incursion has "advanced beyond containment" suggests several things. First, that the response to the outbreak by the grower, and BT was too slow and inadequate. The grower waited several weeks before notifying BT of the presence of the rust, and BT has had a complete season to enact more substantial control measures. If it is true that containment is no longer possible, then continuing containment efforts are wasted money. If the mobility of the fungal spores

precludes eradication, it would suggest that containment or control is also impossible.

I would rather suggest that the particular circumstances of Tasmania, that it is physically isolated, has a winter dormancy, allows us an opportunity to eradicate the disease, assuming that defoliation and pathogen dormancy is exploited either by selection of varieties with natural defoliation, or by chemical defoliation.

Further, the argument that future incursions may occur, making efforts of eradication futile, implies that the biosecurity strategy is ineffective, and would have wide ranging and more general implications. We need instead to strengthen the response, including improving the security of the border to host material, through exclusion, treatment and inspection, maximise efforts to eradicate the disease, and manage isolated incursions that already exist. The imminent observations by BT staff of the extent of the disease, once host material becomes available around the state, will indicate the extent of the problem, and the scale of the work needed to manage the situation.

3. *Response to BT*

The BT response document largely mirrors the previous documents, so my response is largely covered above. The main points I would highlight are that they assume that their containment strategy is manageable for the entire industry, that 100% defoliation is impossible, and that containment is unlikely to succeed, but should nonetheless be pursued.

As discussed above, smaller growers, including those dependent on a particular export market, organic growers, and self-pick farms are all disproportionately impacted by the current strategy. Uncertainty of market access, requirements of chemical treatment potentially impossible within their operations, and the increased pathogen load in the state may make the operation of their businesses unviable.

Defoliation is difficult currently due to a number of factors, mainly due to particular operations. Tunnels increase the air temperature, making natural defoliation less reliable, and occurring later in the season, and for a shorter duration. The use of evergreen varieties to increase pollination means chemical defoliation becomes necessary, which is a stress on the plants

If BT proposes that the containment strategy they are implementing is unlikely to succeed, I would question why they are following it against the wishes of a large proportion of the industry. It seems all the more important to adopt a more comprehensive approach.

Potential blueberry rust containment/eradication strategy, implied by discussion with Peter Cross, taking into consideration the experience and observations of DPI NSW and TIA, together with a pinch of common sense.

The main point in the strategy would be a more comprehensive containment/eradication strategy. This would involve:

On infected sites:

1. (implemented) Chemical treatment of existing disease symptoms using appropriate fungicides, to suppress the expression of the disease.
2. (Implemented) Biosecurity measures to minimize the risk of spread of rust spores, including restriction of movement of rust vectors, such as fruit, host plants, vehicles, clothing etc.

3. Defoliation. Use natural defoliation for deciduous varieties, and chemical defoliation of evergreen varieties to ensure an 8 week period without host material present, together with removal and disposal of potentially infected leaf material from the area.
4. Where control measures are not adequate, and disease symptoms are present and persistent, ie not controlled by fungicide, an infected plant removal strategy must be implemented.

Industry-wide:

1. To wherever possible select varieties that are deciduous to maximise natural control of the rust through a yearly break in the presence of host material
2. To ensure all operations implement a regime of chemical defoliation in instances where they must have evergreen varieties
3. To implement and practice good farm biosecurity practices to minimise the exposure of plants to potential rust vectors, within the limits of the practicalities of individual farm models.

Eradication does not necessitate the destruction of infected plants, except in circumstances where all other measures have failed.

One of the features of the government agency reports is the lack of scientific data to support the claims that eradication is impossible. This is natural, as the rust is new to our state. It seems imperative however that the relevant bodies undertake further research to establish the viability of the rust in Tasmanian conditions in greenhouses, grow tunnels, and in the field, and its response to leaf defoliation of various durations, together with the impact on different blueberry varieties of manipulation of defoliation for different periods, at different points in their seasonal growth. The limited data supports the argument made by independent growers and myself, that chemical defoliation can at least play a part in the containment/eradication strategy.

Further, it seems imperative that, since any strategy has financial and other impacts for all stakeholders within the industry, containment/eradication needs to be collaborative, with goals, outcomes and procedures discussed openly between government agencies and the industry, to allow decisions to reflect the wishes, and include consideration of the costs, to all parts of the industry, including the large number of independent growers in the state. Costs of eradication need to be weighed against industry costs due to lost market access and loss of the brand that Tasmanian blueberry growers have worked hard to establish.