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Tasmanian Institute of Agriculture

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Managing blueberry rust in a cool climate

2026 Update

Contact: Kara Barry, Kara.Barry@utas.edu.au

Blueberry rust in Tasmania is caused by the fungus *Pucciniastrum minimum* (formerly *Thekopsora minima*). It was declared endemic in Tasmania in 2022 due to widespread disease detections in the 2021/22 season. Preventing blueberry rust infection is key to limiting the impact of this disease on productivity and market access.

Blueberry rust research in Tasmania

Research into blueberry rust management strategies in Tasmania has been underway since 2019 and two projects, funded by the state government's Agricultural Innovation Fund, have now been completed.

The first project evaluated fungicide options for organic growers, and led to the minor use permit for **Intervene**, for rust suppression in blueberry.

The second project aimed to answer key questions about **rust survival** over winter and strategies for **managing blueberry rust** in Tasmania.

Key issues	Research Goal
Managing overwintering rust on evergreen & semi-evergreen cultivars →	Break the rust lifecycle
Understanding the environmental conditions for rust survival & infection →	Identify when & where high risk conditions occur for spore survival and infection

KEY POINTS - Preventing overwintering rust

Rust survival in cold conditions – Studies showed that the rust spores (urediniospores) were not deterred by cold as low as -5°C for 16 hours. Therefore, typical Tasmanian winter conditions will not inhibit this pathogen.

Defoliation – Field trials showed Legacy plants could be defoliated via a range of chemical spray options, but there was no optimal outcome to do so effectively without a substantial impact on fruit yield. Hand defoliation did not affect fruit yield if conducted in mid-winter.

KEY POINTS - Infection timing and risk

Timing of leaf development – Field studies found that leaf development in Legacy and Brigitta in Tasmania could be best predicted based on daylength (photoperiod). This allowed us to develop a calendar guide for leaf development, to assist with fungicide scheduling.

Infection risk – Rust infection occurs across a range of temperatures, when moisture is available. We produced a spatial map of rust infection risk for Tasmania, to improve awareness of risk.

Management recommendations

Based on these research findings, the key recommendations are to follow **standard disease management** practices during the growing season.

Growing **only deciduous varieties** will prevent the existence of overwintering inoculum and reduce but not eliminate the need for disease management.

Standard disease management priorities:

- Monitor for disease symptoms regularly
- Fungicide program (organic or conventional) with regular application during infective period (if rust present)
- Removal of inoculum – pruning and good general hygiene (consider hand defoliation for small, highly infected areas)
- Management of canopy moisture – open canopies, dripper irrigation, weed control, planting N-S orientation.

Preventing overwintering rust

Is defoliation an option?

Evergreen and semi-deciduous blueberry varieties can harbour the rust overwinter. To break the rust life cycle, we investigated whether defoliation was a viable option.

Question - How to safely remove all leaves from semi-evergreen blueberries (Legacy) without impacting yield.

Several field trials were conducted in a commercial orchard in southern Tasmania.

Hand defoliation was used as a control, and we found effects of defoliation timing on fruit yield:

- Mid-June or early July - there was NO impact on fruit yield over the following two harvests.
- Late-April or mid-May – substantial reduction (approx. half) in fruit yield the following harvest.

Chemical defoliants explored were ProTone® (PGR, s-abscisic acid), urea + copper chelate, or copper sulphate.

- Late-June application - both the urea + copper chelate, and the copper sulphate treatments resulted in full defoliation but dramatic reduction in fruit yield (under 20% of control).
- Late-April or mid-May – ProTone® requires 16°C+ air temperature for application, and so was applied in autumn, which achieved full defoliation with two sprays. Fruit yield was reduced, but least for the mid-May treatment (84% yield compared to control) and recovered fully the year after.

Takeaway message – No commercially promising options found to achieve effective chemical defoliation without substantial fruit yield impact, in Tasmanian conditions.

Spore survival in winter temperatures

These studies were conducted in NSW by SCU due to the greater availability of fresh rust spores. Molecular studies by TIA confirmed that the pathogen in NSW was genetically identical to that in Tasmania. Studies were done across 2 years.

Year 1 – Infected leaves were incubated at either 5°C, 0°C or -5°C for up to 16 hours. Rust spores were still almost 100% viable, and germination was only slightly reduced at -5 °C. Pustule numbers were reduced 1 week after cold treatment, particularly at -5 °C, and after 2 weeks no pustules were produced for that treatment.

Year 2 – Infected, whole potted plant were incubated at -1 °C for 8 hours for up to 8 days total. There was no significant reduction in spore viability or germination.

Takeaway message – Blueberry rust urediniospores are TOUGH, they can survive Tasmanian winter conditions.

Understanding timing and risk of rust infection

Timing of leaf development

Field studies, conducted at 5 commercial orchards across 2 years, found that on average Legacy leaves developed from 5 to 75% expansion over a period of 7 weeks, and Brigitta took about 4 weeks. Assessment of weather data from these locations was used to determined if accumulated temperate (growing degree days) could be used to predict leaf development. It was found that the best prediction across all sites was based on daylength (as opposed to temperature). This allowed us to develop a calendar guide for leaf development, to assist with fungicide scheduling.

Blueberry leaf predictor (Tas)

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% Leaf	Brigitta	Legacy
5%	18 Sept	14 Aug
25%	24 Sept	28 Aug
50%	1 Oct	12 Sept
75%	10 Oct	1 Oct
100%	8 Nov	27 Nov

*These dates are best-estimates which fit across all sites studied. *Individual sites may differ.*

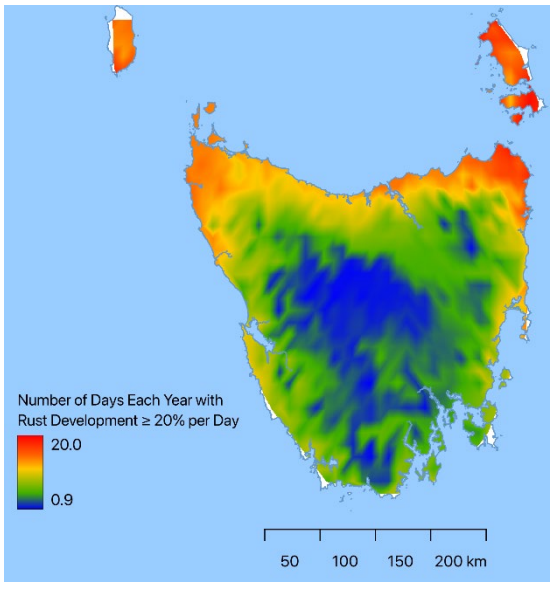
Studies of Legacy suggested that leaves increase in rust susceptibility at about 3 weeks. **Recommended earliest spray date for Legacy = 4 September.**

Brigitta leaves develop more quickly than Legacy, so may be susceptible at 1.5-2 weeks. **Recommended earliest spray date for Brigitta = 1 October.**
** However, fruit develops early in Brigitta and can also become infected. Check local timing of fruit development.

Spatial assessment of rust infection risk

Existing models for blueberry rust infection risk were explored, and the effect of temperature on spore germination validated with Tasmanian rust samples in laboratory studies.
Using weather data for Tasmania from 1986-2015, rust risk was determined across the state, based on spore germination rate.

This map shows that areas in red may experience about 20 days per year when at least 20% of rust spores germinate, while yellow areas may have 11 days, green areas 5 days, and blue areas only 1 day. *This is general advice only.*



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