

# Organic crop protectants for controlling blueberry rust

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- NSW Department of Primary Industries with the help of Southern Cross University have recently conducted a field trial to evaluate a range of organic crop protectants to manage blueberry rust disease (caused by *Thekopsora minima*).
- This trial is part of a larger project led by Kara Barry from the Tasmanian Institute of Agriculture and funded via the Tasmanian Government through the Agricultural Innovation Fund.

## The field trial

The trial evaluated eight products for control of blueberry rust (Table 1). Products were applied as foliar sprays every 2 weeks from April through to June. Mancozeb and copper were included as reference treatments in the trial, in addition to the products being evaluated.

Trials were set up in a complete randomised block design with five replicate blocks per treatment and three plants assessed in each treatment block. Each block had a 2-plant internal buffer and each row was separated by a buffer row.

**Table 1. Fungicides and application rates evaluated for their efficacy against blueberry rust.**

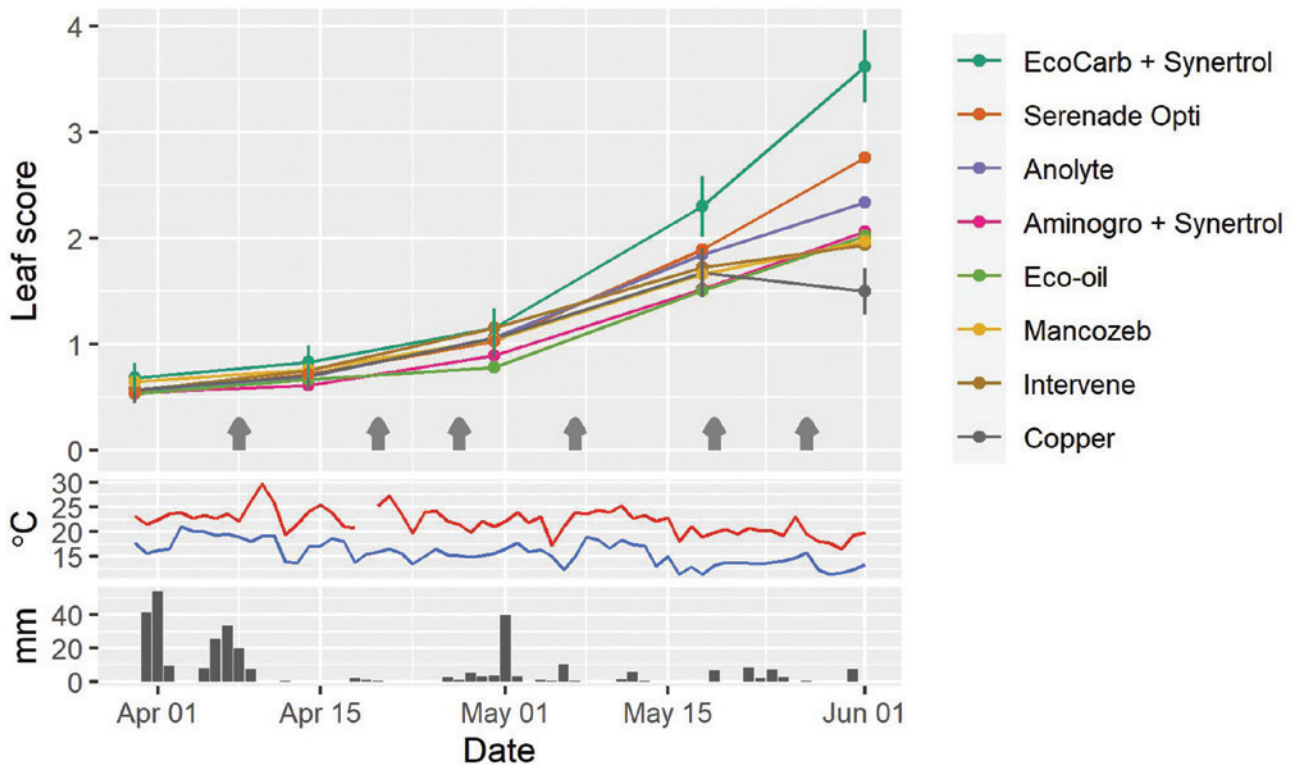
| Active Constituent   | Trade Name                  | Rate of Application (g/100L) |
|--|-----------------------------|------------------------------|
| <b>Mancozeb</b>  | Mancozeb DF 750             | 200 g/100 L                  |
| <b>Copper present as hydroxide</b>   | Blue Shield DF 500g/kg      | 105 g/100 L                  |
| <b>Bacillus amyloliquefaciens strain QST 713</b>                                 | Serenade® Opti              | 250 g/100 L                  |
| <b>Crustacean and wild fish waste fortified with trace minerals and vitamins</b> | Aminogro® +                 | 1 L                          |
| <b>Emulsifiable botanical oil</b>  | Synertrol® Horti Oil 850 EC | 250 mL                       |
| <b>Polyoxin D zinc salt</b>  | Intervene®                  | 40 g/100 L                   |
| <b>Potassium bicarbonate + potassium silicate</b>                                | Ecocarb® Plus 945 SP +      | 400 g/100 L                  |
| <b>Emulsifiable botanical oil</b>  | Synertrol® Horti Oil 850EC  | 250 mL/100 L                 |
| <b>Electrolysed oxidised water</b>   | Anolyte                     | 20 L/100L                    |
| <b>Emulsifiable botanical oil</b>  | Eco-oil® 850 SL             | 500 mL/100 L                 |



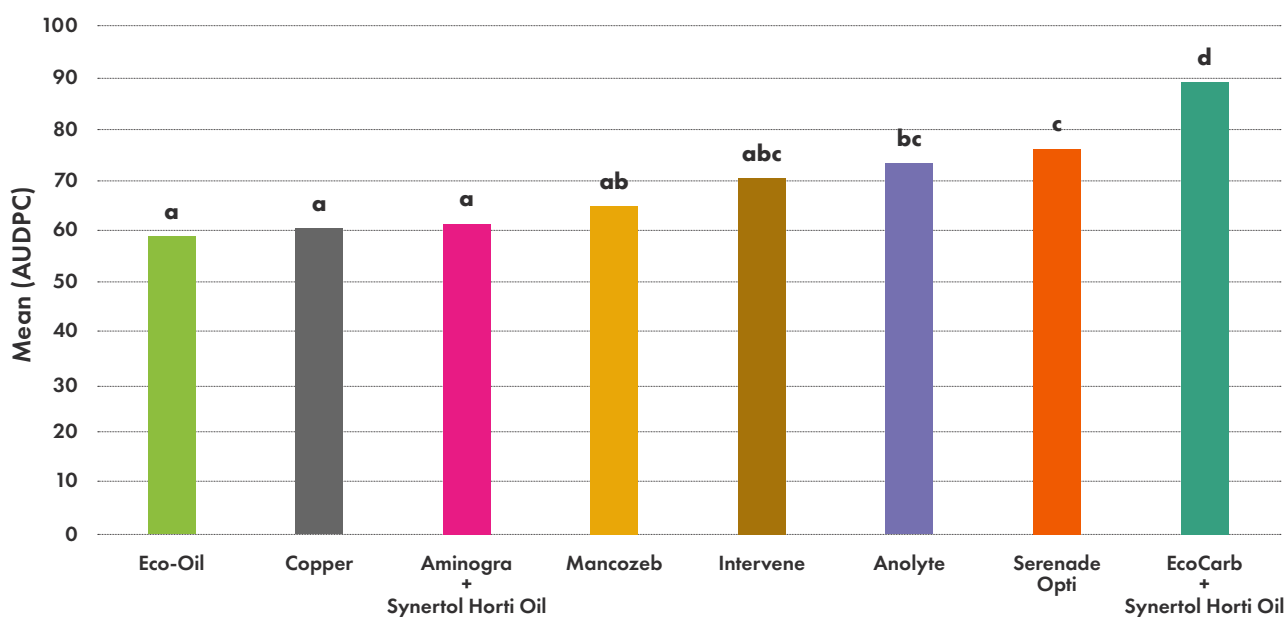
**Figure 1. Rust levels on experimental plants in the trial.** Photo credit: Jay Anderson, SCU.

### Measuring rust severity

We assessed disease severity on 20 leaves per plant by visually rating the leaf area affected by blueberry rust every two weeks (Figure 2). The cumulative disease severity for the whole season can be visualised by looking at the area under the disease progress curve (Figure 3).



**Figure 2. Disease severity following application of treatments against blueberry rust.** Data presented are the average disease score over time, where a score of 0 indicates leaves with no blueberry rust and 4 indicates leaves with 15–25% leaf area affected by blueberry rust. Vertical bars span 95% confidence limits for the best and worst performing treatments. Upward arrows represent spray dates. Figure 2 provided by: Steve Morris, NSW DPI



**Figure 3. Disease severity of blueberry rust expressed as the area under the disease progress curve (AUDPC) following fortnightly application of selected chemicals from April through to June 2021. Different letters at each column indicate significant differences between treatments (P<0.05).**

## Key Findings

Disease severity increased over the season (Figure 2). Blueberry rust is favoured by high relative humidity, rainfall and -warm temperatures (18–25°C). These conditions were experienced throughout the trial which most likely contributed to the high disease levels experienced.

Best performing products included Eco-oil, Copper, Aminogro + Synertrol Horti Oil, Mancozeb and Intervene with no significant differences found between these treatments. (Figure 3).

## What's next

This trial will be repeated over the next 6 months to verify the results. The key project output will be a minor use permit for the product that demonstrates effective control of rust in blueberries and is safe for the crop. This will provide growers with additional options to reduce biosecurity risk and maintain crop productivity and market access.



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