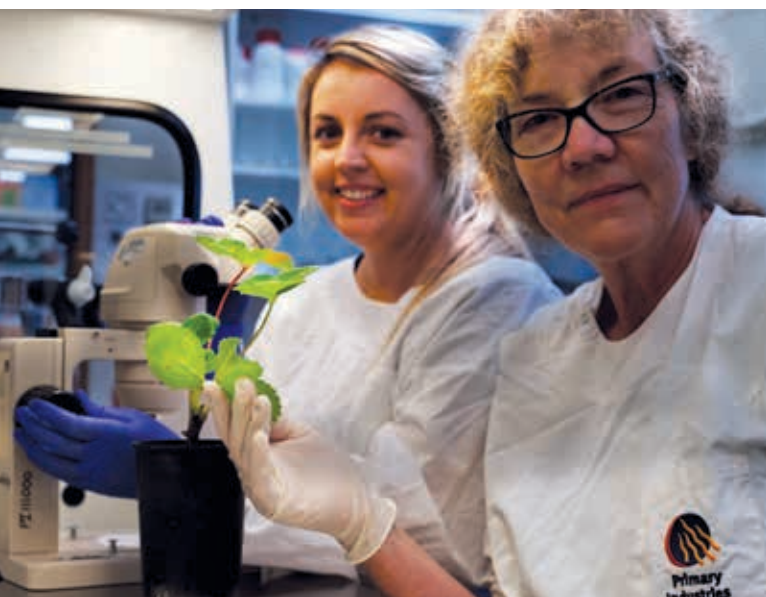


Investigation into the cause of red leaf disorder in strawberry plants: an update

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In February 2019, the Queensland Department of Agriculture and Fisheries (DAF) funded a study to examine possible causes of the red leaf disorder that has been occurring in commercial strawberry farms in South-East Queensland. The disorder, which is characterised by reddish/maroon discolouration between the veins of the leaves, can reduce plant vigour and yield. Red leaf has been observed to varying extents in most of the commercial cultivars.





This first project investigated a number of different areas in an effort to better understand and identify the disorder. These research areas included:

- better understanding incidence and distribution of affected plants in commercial fields;
- screening for the presence of all known strawberry viruses via molecular testing;
- screening for phytoplasmas, rickettsias, as well as other fungal and bacterial pathogens by developing and searching next generation sequencing information for matching DNA signatures;
- investigating possible transmission between plants via grafting and rub inoculation; and
- testing potential role of nutrient deficiencies via nutritional testing and supplemental nutrient sprays.

These analyses have not identified a single, obvious causal agent. Previous work carried out by DAF isolating fungal pathogens from infected plants similarly found no discernible causal agent.

Some observations suggest that crop management and fertiliser regimes may be associated with reduction of symptoms in plants. This requires further investigation.

From this study, it is apparent that the disorder and mechanisms behind its occurrence are complex. It requires more extensive sampling and a broader range of analyses to identify the causal factors.

For this reason, DAF has funded a second larger project. This will allow us to expand our work on this issue, and includes a larger cross-organisational project team incorporating experts in the relevant fields.

The time frame for this second project is from November 2019 until October 2020, and the research will include:

- further investigation of potential nutritional causes, by conducting controlled nutrient experiments;
- broadening the search for potential fungal and bacterial pathogens via more extensive sampling, isolations and molecular assays;
- Transmission Electron Microscopy to detect unknown pathogens or damage to plant's physiology;
- gene discovery - searching for potential pathogens that may contribute to this disorder using High throughput DNA/RNA sequence analysis
- investigation of potential insect vectors that may be transmitting the disorder;
- examination of potential sources of resistance or tolerance in breeding lines; and
- conducting an independent grower survey to better understand the epidemiology of red leaf.

Regular updates on findings will be provided throughout the project.

CONTACT

If you notice any of your plants showing red leaf symptoms, or have any questions or information that may assist, contact:

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