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Yellow canopy syndrome (YCS) was first identified in 2012, and since then has been the subject of an extensive program of research led by Sugar Research Australia (SRA), in collaboration with multiple research partners in Australia and in consultation with international researchers.

This research effort has provided valuable information about the symptoms, cause, and management options for YCS, as well as a deeper understanding of the fundamental physiology of our commercial cane varieties. This knowledge will be of significant benefit to the Australian sugarcane industry and scientific community.

A [recent webinar](#) presented by SRA Researcher Gerard Scalia summarised the most recent findings from the YCS research program and we encourage you to view the online recording of this [webinar](#).



In summary, based on extensive investigation, YCS is currently considered a physiological disorder, not a disease. YCS is always preceded by a period of stress. Slow growth followed by rapid growth creates a supply demand imbalance which causes high levels of sucrose accumulation in the mid-canopy leaves. High leaf sucrose initiates yellowing and accelerates senescence (ageing).

Our strong theory is that the cause is any form of stress that significantly slows growth and reduces the 'sugar sink' size or strength.

The best way to manage or prevent YCS:

- Where possible do not let the crop slow up in growth.
- Follow best practice and use every available resource to reduce plant stress.

Responses to insecticides have also been observed in YCS trials and the role of insects in YCS expression is still being investigated.

Correct diagnosis of YCS

Cane can appear yellow for a range of reasons but, in many cases, yellow cane is not YCS.

For example, YCS has been misdiagnosed as other issues with the crop such as nutrient deficiency, known diseases, natural senescence, or herbicide damage, all of which can cause leaf yellowing

This has created difficulty in understanding the true extent of YCS and its economic impact, especially on a district-scale and industry-scale. The recently-developed YCS identification [in-field kit](#) has helped with the correct identification of YCS, as used by productivity services officers and SRA adoption officers and researchers.

There are three main characteristics that separate YCS from all other forms of senescence are:

1. The mid-canopy yellows first (only visible for a short time and thereafter cannot be distinguished from natural senescence).
2. The orange-yellow golden colouration which reflects the high carbon load of the leaf at the onset of yellowing.



3. The exorbitantly high sucrose levels in the mid-canopy leaves.

YCS project oversight

The three major YCS projects within the research program are nearing their set conclusion date, which will see SRA modify the way we invest in and manage YCS research in the future.

Previously, the YCS research program was overseen by an independent scientific reference panel (SRP). Any future research on YCS will transition to the SRA Research Funding Unit (RFU), which is responsible for the oversight of all of SRA's contestable research investment. Future investment in YCS will be determined in the context of all other potential investments as part of a prioritised investment framework. New YCS activity will operate within a normal research project timeline, with set milestones.

Next steps

SRA is currently seeking a PhD student to assist with advancing techniques for diagnosing YCS and to investigate if insects may play any role in its expression. This position is currently advertised on the SRA website [here](#). The PhD student will be supported for three years, via investment from a Grains Research and Development Corporation (GRDC) led project through the Australian Government Rural R&D for Profit Program.

In addition to this work, and the conclusion of the existing projects, SRA Researcher Gerard Scalia is currently collating findings from the research program.

SRA will continue to keep industry informed of progress and new information from our investment into YCS.

- SRA acknowledges the funding contribution from the Queensland Department of Agriculture and Fisheries (DAF) towards this research activity. SRA also acknowledges the funding contribution from the Australian Government through the Rural R&D for Profit Program.

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