

Industry update - 21 October 2013

Distribution

Yellow Canopy Syndrome (YCS) is still seen mostly in the Herbert and Burdekin cane-growing regions with the most severely impacted area being the Pappins Rd district, south of Ingham.

In both regions symptoms have been confirmed in approximately 40 fields of young plant and ratoon cane.

Several affected fields in the Tully region continue to be monitored.

In the Mulgrave region we are aware that there are a number of farms –some of which are displaying severe symptoms—that are affected.

Monitoring sites

Monitoring the distribution and spread of YCS throughout the affected regions and assessing the severity of YCS at a number of sites continues.

Sugar Research Australia (SRA) together with our project partners Herbert Cane Productivity Services Limited (HCPSL) and Burdekin Productivity Services Limited (BPS) are diagnosing new reported cases and generating maps to track the distribution and spread of affected blocks in each district.

We are also monitoring FAT variety trials to assess any differences in susceptibility and symptom expression between varieties.

Impact of YCS on yield and CCS

As the harvesting season nears completion the impact of YCS on yields and CCS has been evaluated.

In general, yields in the Herbert and Burdekin cane-growing regions have been lower than average, however this may be due to a range of factors.

It has been difficult to assign yield losses solely to YCS except in cases where blocks have been severely affected and where repeated waves of yellowing have been observed over an extended period of time. In these blocks we have measured yield reductions of between 30-40 per cent.

Although CCS levels appeared to be lower in severely affected cane early in the crush, the levels improved as the crush continued. Little if any apparent losses of CCS were recorded as the season progressed.

Together with HCPSSL and BPS we are currently conducting a review of the season to better understand the impact of YCS on yield and CCS.

Research update

Research is continuing in the SRA and the Department of Agriculture, Fisheries and Forestry Queensland (DAFFQ)-funded *Solving the Yellow Canopy Syndrome* research project.

Collectively our research is paying attention to how the condition is transmitted, whether it can be managed using every day standard practices and whether some causes, which we haven't investigated, may trigger it.

To date we have ruled out a number of possible causes.

However our research efforts have been slightly hampered as we have not yet been able to induce YCS symptoms in non-affected sugarcane.

We continue to work with the Scientific Reference Panel. Since their visit to the affected areas in late August we held a teleconference on 6 September 2013 and participated in a meeting on 12 September 2013.

Transmission trials

There have been a range of anecdotal observations that suggest that YCS may be transmitted in planting material.

To address this question we are undertaking a number of replicated scientific trials to investigate if this is the case.

YCS transmission trial - Tully

A pot trial to test the transmission of YCS via planting material was established in Tully at the end of April 2013.

This trial is using two varieties of cane from the Burdekin cane-growing region that show severe YCS symptoms and cane sourced from Tully as a 'no symptoms' control .

What we have seen so far

It was noted that germination was slightly affected by YCS but subsequent growth has not been affected by the source of planting material. At times, yellowing has been observed across all treatments even in the apparently healthy cane from Tully, but this yellowing could not be related to YCS symptoms in the original plant sources.

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The plants have recently been placed into larger pots to facilitate long-term growth of the test plants. All plants are growing vigorously and leaves are green. At a recent meeting of the YCS advisory committee it was decided that the plants should be transferred out of the glasshouse and maintained under more natural conditions. The plants have since been transferred and will be monitored until they are 12 months old.

YCS transmission trial - Woodford

A second trial has been established to investigate whether YCS transmission can occur via planting material.

The aim of this trial is to observe whether plants can contract YCS symptoms in an area completely isolated from the affected areas.

The trial consists of two components; a glass house and a field trial. Within each component three varieties are being assessed—Q200, Q247 and KQ228.

Planting material was sourced from the Herbert and Burdekin cane-growing regions and unaffected areas including Mackay, Bundaberg and NSW. Monitoring will continue and updates provided as the trial progresses.

Soil Biology trial - Ingham and Tully

This trial is seeking to determine whether YCS is transmissible through soil and whether YCS is caused by soil fungi or nematodes. It will also seek to determine the impact of YCS on sugarcane root systems.

Using Q200 plant source from YCS affected and non-affected plants, this trial will employ a range of soil chemical treatments including complete soil sterilisation to assess the impacts of soil biology on YCS.

Planning for this trial is nearing completion and it is expected to be established by the end of this month. The trial will be duplicated and run simultaneously in Ingham and Tully.

Management trials

Impact of water stress and Imidacloprid application - Burdekin

A trial was planted in the field on the 28 August 2013. It contained KQ228 with YCS symptoms sourced from the Burdekin, and KQ228 without YCS symptoms sourced from Tully.

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Further treatments include:

- two water regimes (stressed, unstressed)
- two imidacloprid treatments (applied at planting or hill-up) and an untreated control.

This trial will further assess the transmission of YCS symptoms in planting material and evaluate whether water stress is associated with the expression of symptoms. It will also test whether imidacloprid application and potential improvements in root condition reduce YCS symptom expression.

In addition to this trial, observations are being made in a number of other SRA trials where water use efficiency is being assessed under controlled conditions.

Assessing cold soak hot water treatment by variety trial - Burdekin

An SRA and BPS collaborative trial has been established to evaluate the effect of cold soak hot water treatment on YCS. The trial involves a range of varieties and will assess the occurrence and severity within plant cane.

Planting sources are currently being propagated and the trial is scheduled to begin by the end of this month.

Imidacloprid trial - Herbert

This field trial established in early August, seeks to investigate claims that imidacloprid eases symptoms of YCS.

Q208 has been planted and a range of imidacloprid treatments applied. Though drought conditions have slowed early growth, we continue to monitor this site weekly.

YCS causal agents

Investigations continue to examine the potential causal agents for YCS.

Molecular diagnostics

The protein composition in healthy cane and cane showing YCS symptoms has been examined.

Although a number of these comparative studies showed no difference between the healthy and YCS samples, two did show promising results.

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In these two comparisons unique proteins which were seen in the YCS samples, were not seen in the healthy samples.

However the unique proteins were not the same in both YCS samples. These samples will be examined as the next step in this line of investigation.

Insect trial - Burdekin and Herbert

A pot trial has been established to assess whether YCS is caused by insects.

In this trial clean, non-YCS affected sources of KQ228 and Q200 have been planted into a sterile non-soil potting mix and placed into two insect-screened houses. One house is open to insects, the other insect-free.

Water and nutrient management are carefully controlled.

Specificity trial – Burdekin and Herbert

With possible YCS symptoms being noticed in other grass species a trial has been devised to identify whether grasses other than sugarcane are susceptible to YCS.

This trial will be planted by the end of October and will be duplicated to run simultaneously in the Burdekin and Herbert.

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