



Dr Anne Rae explains her research to fellow researchers recently.

Project details

Impact Area:

YCS

Project name

Sugarcane root systems for increased productivity; development and application of a root health assay

Project number

2015/002

Principal provider

CSIRO

Project leader

Dr Anne Rae



Roots project aims to fill missing link in YCS research quest

Researchers are taking a look under the ground – into the roots – in the search for answers on the mysterious Yellow Canopy Syndrome. By Brad Pfeiffer

A new research project looking at the roots of sugarcane plants is hoping to shed light on the Yellow Canopy Syndrome (YCS) mystery.

The SRA-funded project is being led by CSIRO and is part of SRA's integrated research investment into solving YCS. The Scientific Reference Panel, which helps inform and guide SRA's YCS research, identified the need to look closely at the roots of cane impacted by YCS, as they saw that this was a gap that was not being covered by other YCS research projects.

While other SRA-funded YCS projects are looking at some aspects of the roots, this new project began in late 2015 and is delving further into the plant underneath the soil.

Plants that are thought to have YCS have often shown poor root health, although it is not yet known whether YCS may cause poor roots, or if poor roots cause YCS.

The CSIRO project is hoping to add to the information being gathered in the other YCS research projects.

Also, it is hoped that it will deliver long-term beneficial information about sugarcane roots that could deliver productivity outcomes in the future.

Dr Anne Rae with CSIRO Agriculture is the lead investigator of the project and said that the project would conduct a range of experiments based on analysing the roots and their performance and the impact on growth and plant health.

"Root systems play many important roles including anchorage, water uptake, nutrient uptake, and interaction with soil microorganisms," she said. "And the YCS research program has been identified as an area where greater information about the roots could be useful.

"Sugarcane is very large and dense, which makes it hard to see what is happening under the ground, and therefore there is a big gap in our knowledge that we are trying to fill."

The objective of the project is to provide a baseline description of healthy sugarcane root systems and identify specific constraints that affect root development and root health.

The research will use both pot and field trials and look at a wide range of sugarcane varieties and conditions.

Research in other crops has shown the importance of root traits upon their productivity. For example, deeper roots in maize can allow for better growth by accessing subsoil moisture, and vigorous early root growth in wheat allows for more efficient uptake of nitrogen.

As the project progresses, it is hoped to determine whether information about the roots can be used to diagnose or monitor for YCS. It will also help provide a baseline to the other YCS research projects.

Dr Rae is working on the project with post-doctoral researcher Dr Johann Pierre. Dr Pierre has previously worked in an SRA-funded project to support the safe deployment of GM sugarcane varieties. For more information contact Dr Anne Rae by emailing anne.rae@csiro.au.

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