

In the field with the toolkit, BPS Trainee Extension Officer, Tahlia Kinrade. (Bottom left) SRA Burdekin Farm Manager, Jeff Blackburn, discussing soil health with Adoption Officer, Jai Kaartinen-Price. (Bottom right) Ready for action – Soil Health Extension Toolkits. (Right) Training advisors in the use of the Sugarcane Soil Health Extension Toolkit in the Herbert.



# CREATING DISCUSSIONS, GENERATING CURIOSITY, & PROMOTING SOIL HEALTH: SUGARCANE SOIL HEALTH EXTENSION TOOLKIT

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**S**oil health describes the physical, chemical, and biological condition of soil, the impact of management practices and environmental conditions on soil properties, and the functional ability of soil to support plant growth and sustain environmental quality.

The Soil Health Project of the Herbert and Burdekin Regions has designed an extension tool to create discussions between growers and advisors, generate curiosity and encourage greater interest in sugarcane soil health.

“The Sugarcane Soil Health Extension Toolkit provides a practical assessment of soil health,” said Project Chief Investigator, Dr Danielle Skocaj.

The toolkit will primarily be used by advisors working alongside growers. “Growers are able to work with their advisors to measure soil health and monitor changes over time using this toolkit.”

The project has established and sampled twenty paired sites in the Herbert and Burdekin regions to measure the long-term impacts of different farming practices on a range of soils chemical, physical and biological properties.

The aim of these paired sites is to identify meaningful indicators of sugarcane soil health. A subset of these soil health indicators forms the basis of the Sugarcane Soil Health Extension Toolkit.

This toolkit contains a range of instruments to measure soil physical (bulk density, moisture content, compaction, water infiltration and dispersion) and chemical (soil pH, electrical conductivity, and sodium) properties. Measurement of these soil chemical properties also provides an estimate of the soil exchangeable sodium percentage. This can be used to indicate if a soil is sodic. The toolkit can also provide an indication of soil biological activity by measuring labile carbon and earthworm populations.

Measuring these soil properties provides growers and advisors with the ability to assess the impact of different management practices on soil health and understand differences between soil types and management history, relatively quickly and easily. Soil physical measurements are completed in the field while soil chemical and biological measurements can be completed in the field or back at the shed, office, or laboratory once soil samples have been collected.

Use of the Sugarcane Soil Health Extension Toolkit is not intended to replace traditional laboratory soil testing



services. However, it can help identify potential soil constraints requiring further investigation or management intervention and monitor changes over time. For example, if the toolkit indicates a soil may be sodic, mapping of soil electrical conductivity (e.g. EM survey) can be completed, more site-specific soil sampling undertaken, and the results used to develop a prescription gypsum application.

Field evaluation of the toolkit has started in the Herbert and Burdekin cane growing regions and will soon commence in the Wet Tropics and Central regions in collaboration with the Wet Tropics Soil Health Project and Soil Health Project – Central Region.

In the Burdekin, SRA Farming Systems Adoption Officer, Jai Kaartinen-Price and Burdekin Productivity Services Trainee Extension Officer, Tahlia Kinrade have been busy ‘road-testing’ the toolkit. They believe a key feature of the toolkit is that you get the results almost immediately as measurements can be completed in the field.

“We have already identified differences in soil health indicators from the use of different soil amendments and had some growers involved in taking measurements,” Jai said.

Tahlia said: “The toolkit contains everything you need, including detailed operating instructions to complete each measurement, and is easy to transport.”

The development of additional resources, including training videos and interpretation guides is underway. Feedback received from advisors during the field validation phase will be used to identify further refinements to the toolkit before larger scale release and use.

Please contact your local trusted advisor for more information or to register your interest in having the toolkit assessed on your property. ■

For more information on soil health, visit the Soil Health Toolbox on the SRA website: [sugarresearch.com.au/soilhealth](http://sugarresearch.com.au/soilhealth)

The Soil Health Project of the Herbert and Burdekin regions is supported by HCPSSL, BPS, Queensland Department of Agriculture and Fisheries, University of Queensland, University of Southern Queensland, Wilmar, and SRA. Validation and use of the toolkit is also occurring in collaboration with the Soil Health Project – Central Region, which has assistance from Farmacist, Plane Creek Productivity Services, Sugar Services Proserpine, Central Queensland Soil Health Systems, Wilmar Sugar, Queensland Department of Agriculture and Fisheries, UQ and USQ. Another collaborator helping validate and fine-tune the toolkit is the Wet Tropics Soil Health Project, which has assistance from T.R.A.P Services, Tully Sugar, MSF Sugar, Tully Cane Productivity Services, Queensland Government Department of Agriculture and Fisheries, WTSIP, UQ and USQ. These two projects are supported by the Department of Agriculture, through funding from the Australian Government’s National Landcare Program, and SRA.