Te Ahikawariki

SLAKES: A Cost-Effective Measure of Soil Structural Stability

Research Summary

Overview:

Soil aggregate stability describes the ability of soil aggregates to resist degradation and to maintain structure in cropping environments. The purpose of this project was to assess the accuracy of the SLAKES app for assessing soil structural stability, and to develop a standardised methodology for its use. A key part of the project was to engage with growers to demonstrate and support valid paddock sampling and the proper use of the SLAKES app,

Methodology:

Two growers were visited in each of the following four regions: Pukekohe, Gisborne, Hawke's Bay, and Manawatu.

Two areas were sampled on each farm - one in a cropped area and one in an uncropped area of the same paddock.

'Pea-sized' aggregates were taken from each area. Three aggregates were used for the SLAKES protocol. This was repeated three times for each area.

SLAKES Results were compared to results from:

- Landcare Research Manaaki Whenua (LRMW) wet sieving aggregate stability
- Visual Soil Assessments
- Total soil carbon
- Soil bulk density
- Earthworm count

Key Findings

SLAKES aggregate stability index and LRMW mean weight diameter results gave comparable results. The data suggests that:

- SLAKES index above 0.80 - aggregates are stable
- Between 0.80 and 0.65 - somewhat degraded
- Below 0.65 - cause for concern
- Below 0.55 - aggregates are unstable

The aggregate stability scores from cropped sites were much lower than those from the uncropped sites.

Grower feedback was mixed. Some growers said they would use SLAKES testing in the spring before cultivation. Some growers said the testing was too time consuming.

Research Partner: LandWISE