Geophysical Research Abstracts
Vol. 20, EGU2018-19209, 2018
EGU General Assembly 2018

SoilBio – Measurement of soil physical condition using soil biological community structure

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Soil based microorganisms play an important role in soil quality and plant production providing effective indicators of soil fertility and health. Within soils measuring the soil physical condition is a costly and time-consuming process which poses a barrier to gathering key information for its management. Results will be presented on the use of a novel tool for the assessment of soil physical condition for plant growth and production.

Intact soil cores have been collected from across the UK and assessed for potential limitations to plant and root growth through both physical and chemical measurement. Results will be presented from a number of different soil textural classes, under differing management regimes and crop types, to understand physical and chemical relationships with the biological communities living within the soil. Data from intact soil samples has also been compared to recognised measures of soil physical quality such as Dexter S, an indicator of soil structure, and penetrometer resistance, an indicator of mechanical impedance to root elongation, amongst others. Understanding linkages between soil biological communities and soil quality has the potential to significantly increase our understanding of in field variability and in providing information on a number of physical and chemical parameters quickly.

Research has been funded through InnovateUK who support businesses to realise the potential of new technologies.