Characterisation of Soil Phosphorus Forms in Eutric Gley Soils derrived from Basalt Glacial Till in Northern Ireland. (S04-bell062039-Poster)

Authors:

- A.A.W.Bell* - *The Queen's University Belfast*
- J.S.Bailey - *A.E.S.D, Newforge Lane, Belfast*
- R.V.Smith - *A.E.S.D, Newforge Lane, Belfast*
- R.J.Stevens - *A.E.S.D, Newforge Lane, Belfast*

Abstract:

Northern Ireland's complex underlying solid geology has given rise to an even more diverse soil coverage. The most common geological block is that of the volcanic lavas and Mesozoic rocks in the Northeast of the province. The soils here are characteristically high in Al and Fe oxides, which influence the availability of phosphorus and are believed to be responsible, in part, for the failure of the Olsen-P test to accurately predict plant-available P. Characterisation of clay minerals and P forms in these basaltic soils was done using a range of analytical techniques to help to elucidate the P dynamics. Cation exchange capacity (CEC) measurements were made as standard and X-ray diffraction (XRD) was used to identify and quantify clay mineral forms. The Hedley P fractionation method was used as a means of quantifying plant available P, Ca-bound inorganic P (Pi), Al and Fe-bound Pi, labile organic P (Po) and other stable forms of Po. The CEC values proved to be high on these soils. The XRD and Hedley fractionation results indicated the potential for P to be adsorbed by sesquioxides and, in addition, proved information on the proportion of P less readily available for plant uptake.

Corresponding Author Information:

Andrew Bell
The Queen's University Belfast
G30, A.E.S.D, Newforge Lane
Belfast, UK BT9 5PX
Northern Ireland

phone: 028 90 255490
fax: 028 90 255005
e-mail: dingbatbell@hotmail.com

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