Development Of A Reliable Soil Test To Predict Plant Available Phosphorus On Eutric Gley Soils In Northern Ireland. (S08-bell071543-Oral)

Authors:

- A.A.W.Bell* - *The Queens 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:

About 1/3 of Northern Ireland is covered by Eutric Gley soils derived from basalt parent material. Many fields under intensive livestock systems of farming in this basaltic region have been categorised as P-deficient according to the soil Olsen-P test and yet the herbage is replete with P, even when no P has been applied. A study was commenced therefore to try to identify a more reliable soil P test for this region. Five forage grass fields on the basaltic area were chosen and intensively grid sampled, with the help of a GPS, firstly for soil cores in spring and then for herbage samples prior to first cut silage. Phosphorus fractions were extracted from the soils using different reagents and correlated against the P status of the herbage. Morgan (40% NaOH + acetic acid), Olsen (0.5M $NaHCO_3$ pH 8.5 -1/2 hour), Colwell (0.5M $NaHCO_3$ pH 8.5 - 16 hours) and Jackson (0.5M $NaHCO_3$ + 0.1M NH_4F) extractable-P fractions were equally poorly correlated with the herbage P status. However, soil P saturation, based on the relative amounts of P, Al and Fe extracted from soil using 0.2M oxalic acid + 0.2M ammonium oxalate, proved to be highly correlated with the P status of the herbage.

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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