



1. Title

Ecological Significance of Soil Organic Phosphorus

2. Type

Commission Symposium: Comm. 3.3-Soil Fertility and Plant Nutrition

3. Organizer(s) & Convener

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*** Convener**

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4. Rationale

Organic phosphorus is abundant in soils and its turnover contributes to the nutrition of plants in natural and agricultural ecosystems. Despite this, soil organic phosphorus cycling remains poorly understood, which limits our ability to develop sustainable agronomic systems and to predict the response of natural plant communities to a changing climate. Recent developments in solution ^{31}P NMR spectroscopy, microbial DNA sequencing, and novel tracing techniques involving $\delta^{18}\text{O}$ of phosphate offer the potential to significantly advance our understanding of soil organic phosphorus dynamics.

5. Objectives

The symposium will bring together scientists with a common interest in understanding soil organic phosphorus cycling, but working in a variety of different fields (e.g., soil ecology, agriculture, microbial ecology, ecosystem development) and with a variety of analytical techniques (e.g., NMR spectroscopy, enzyme hydrolysis, microbial sequencing, stable and radioactive isotopes). The aim will be a cross-disciplinary synthesis of recent developments in organic phosphorus cycling in soils.





6. Description

The session will begin with a keynote address on the importance of organic phosphorus in the nutrition of plants in agricultural ecosystems by Dr Alan Richardson. Dr Richardson has developed transgenic crops that can secrete phytase enzymes to enable the plants to solubilize organic phosphorus in soils. His talk will directly address the important current topic of strategies to improve the availability of soil phosphorus in light of the impending 'phosphate crisis' or 'peak phosphorus'.

This will be complemented by presentations by convener Dr Benjamin Turner, who will discuss organic phosphorus dynamics in natural ecosystems, and co-convener Prof. Condron who will discuss nuclear magnetic resonance spectroscopy as a tool for identification of organic phosphorus forms in soils.

It is anticipated that a further 8-12 offered presentations will be included in the symposium, depending on available time.

