

# Phosphorus Cycling in the Soil-Microbe-Plant Continuum

Dr John P. Hammond

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New 4 year BBSRC-NERC Global Food Security - Soil and Rhizosphere Interactions for Sustainable Agri-ecosystems project, led by Dr John Hammond, University of Reading.

## Soil



**University of Reading**

Prof. Mark Tibbett

## Microbe



Prof. Liz Wellington  
Prof. David Scanlan  
Dr Gary Bending  
Dr Alex Jones  
Dr Jonathan Moore  
Dr Ian Lidbury

## Plant



**University of Reading**

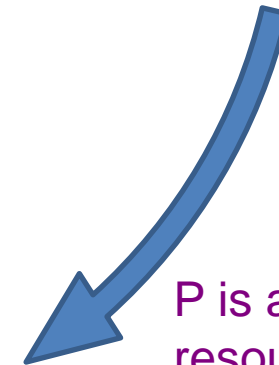
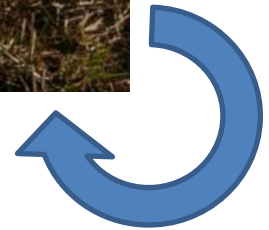
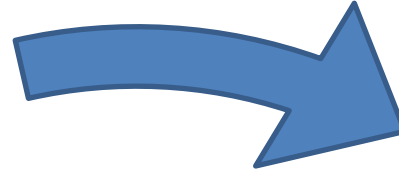
Dr John Hammond  
Dr Andrew Goodall



# Phosphate: from rocks, to roots, to rivers

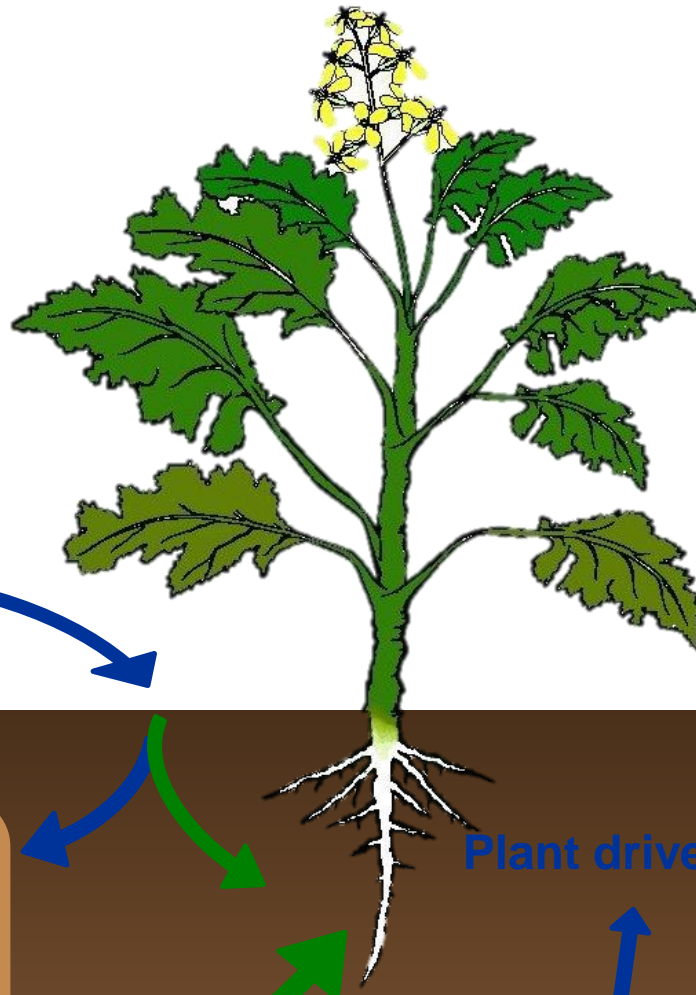


85% of mined P is used in food production.



P is a non renewable resource and excess use pollutes the environment.

# Investigating phosphate cycling in agricultural soils



*Can we reduce inputs, by improving below ground processes?*

*How do these processes change during the season?*

**Fertiliser P**



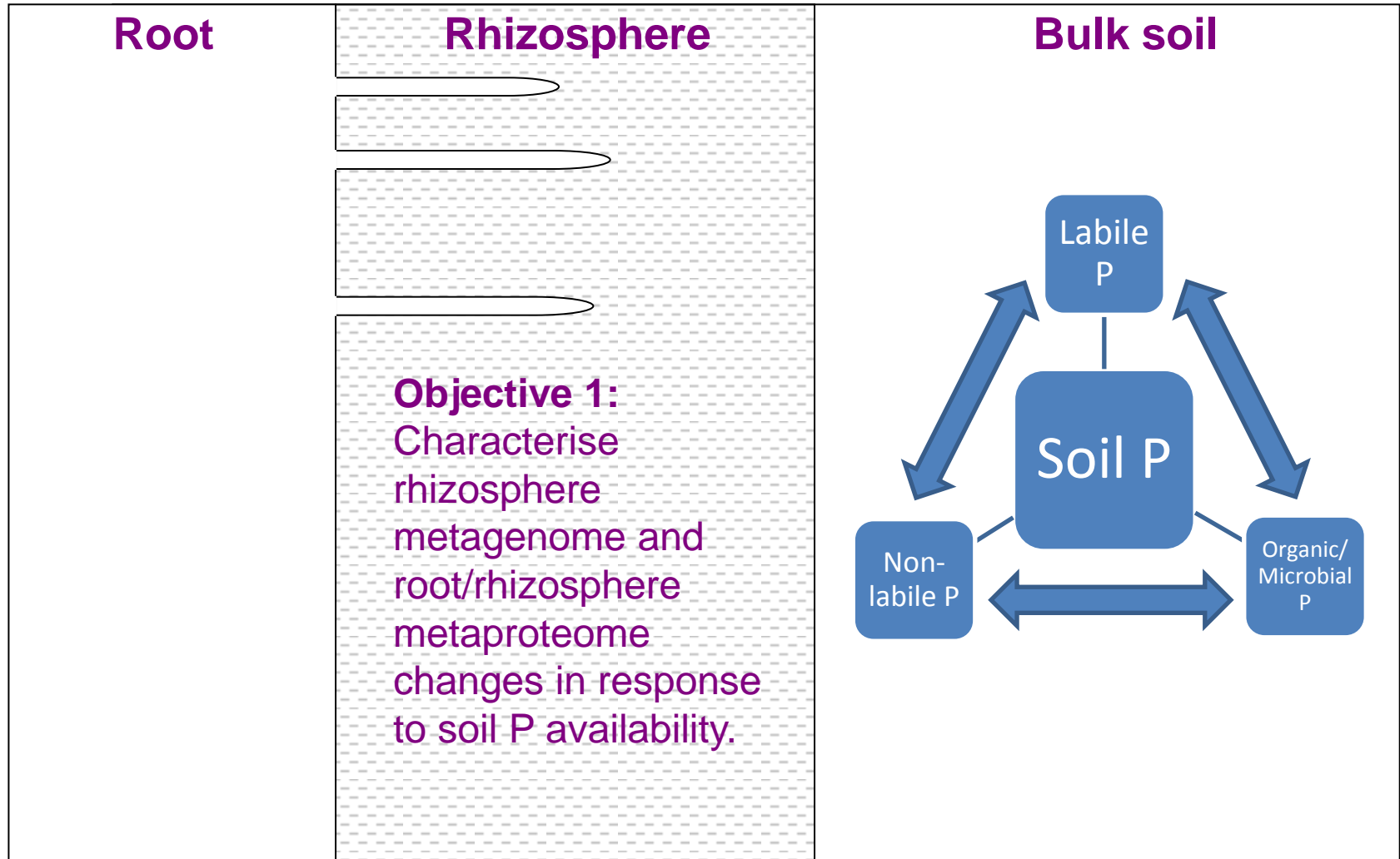
**Plant driven processes**

*How do these processes interact?*

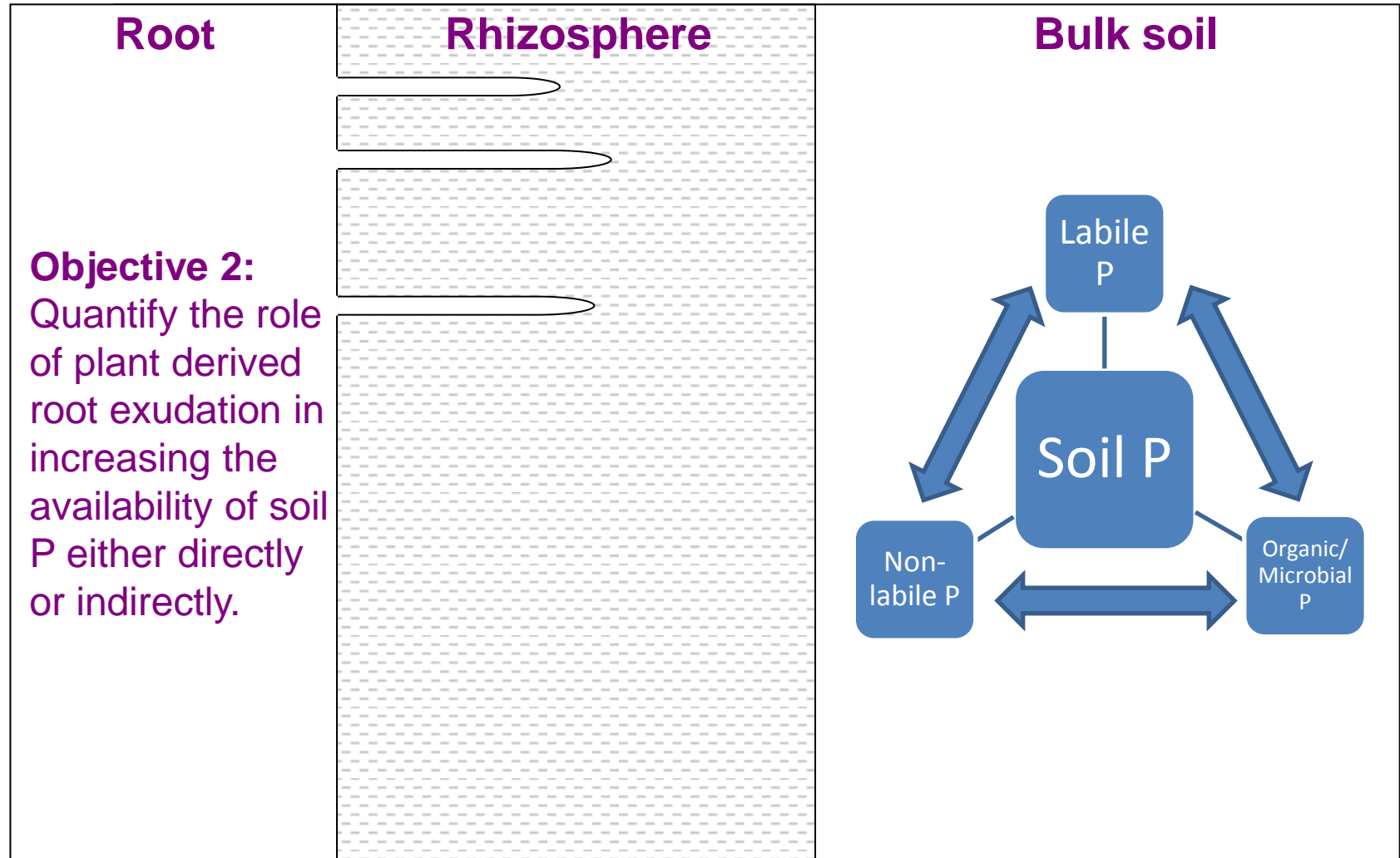
**Microbial driven processes**

*Which microbes are driving this process?*

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**Objective 3:** Temporally characterise the rhizosphere microbial functions, P pools and changes in root gene expression of *Brassica rapa* from seedling stage through to pod filling.

*Brassica rapa*, R-o-18, staged sowing



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**Objective 4:** Assess the microbial functional groups of oilseed rape (OSR) rhizospheres during crop development and their impacts on rhizosphere P cycling.

