



Improved quantification of plant available soil organic P

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Wattle Room: P use efficiency in mining, agriculture, food processing II



Why Quantify Plant Available Organic P?

- Not all of soil organic P is plant available
- Its utilisation would lead to decreased fertiliser application and reduced leaching
- But is plant available organic P sufficient to warrant the investment in developing plants to access the organic P?



Why are current methods not acceptable?



- Choice of solution used to extract and quantify soil P affects quantities and forms of P measured.
- Olsen and Meleisch P designed to extract inorganic P
- Even extractants designed to draw from a pool of plant available organic P, e.g. NaHCO_3 , largely extract unavailable organic P



Use of Organic Acids and Enzyme Hydrolysis



- Organic acids: natural plant exudates which solubilise soil P
- Enzyme hydrolysis: determines how much of the extracted organic P can be utilised.
- By coupling the use of these 2 natural processes, a more realistic estimate of plant available organic P has been achieved.



- 5 soils from tropical forest plots, water and citric acid extracts
- Potentially enzyme hydrolysable P not significantly different from inorganic P
- Therefore worthwhile trying to utilise this soil organic P
- Is the same true in other soils? Especially agricultural soils?

