Phosphorus Sorption

Reagents

*In a 10 liter carboy*

- 7.46 g Potassium Chloride (0.01 M KCl)

Bring to volume with DI water

Stock solution (1000 µg P/ml)

*In 1 liter volumetric flask*

- 4.39 g Oven-dried KH₂PO₄

Bring to volume with DI water

Store in bottle at 4°C with 2 drops of chloroform

Follow the adjacent table for P working solution (enough for 32 samples)

Dilute daily from stock solution

<table>
<thead>
<tr>
<th>µg P/ml (ppm)</th>
<th>Stock (ml)</th>
<th>0.01 M KCl (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>1000</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>990</td>
</tr>
<tr>
<td>25</td>
<td>25</td>
<td>975</td>
</tr>
<tr>
<td>50</td>
<td>50</td>
<td>950</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
<td>900</td>
</tr>
<tr>
<td>150</td>
<td>150</td>
<td>850</td>
</tr>
<tr>
<td>200</td>
<td>200</td>
<td>800</td>
</tr>
</tbody>
</table>

Procedure

*In a 50 ml Oakridge centrifuge tube*

- 3 g Oven-dried equivalent sieved soil (field fresh)
- 30 ml P working standards at each concentration
- 1 drop Chloroform

Shake for 2 days at 150 rpm and then centrifuge for 1 hour.

Repeat the procedure, but add 2 bicarb charged resin strips

Analyze solutions for ortho-P using the ascorbic acid method.

Calculations

\[ X_s = [(s - c) \times F] - E \]

Where:
- \( X_s \) = sorbed P at working solution concentrations (µg P/g soil)
- \( s \) = µg P/ml of original working solution
- \( c \) = µg P/ml of working solution after shaking (i.e., equilibrium)
- \( F \) = ml working solution/g dry soil (e.g. 10 ml/g = 30 ml/3 g dry soil)
- \( E \) = resin-extractable P (µg P/g soil)