

Soil Total/Organic /Inorganic Phosphorus Content Assay Kit

Note: It is necessary to predict 2-3 large difference samples before the formal determination

Operation Equipment: Spectrophotometer/Microplate reader

Cat No: AK0170

Size: 100T/96S

Components:

Reagent I: Liquid 100 mL×1, store at 4°C .

Reagent II: Liquid 5.5 mL×1, store at 4°C .

Reagent III: Powder×1, store at 4°C . Add 8mL of distilled water and 4mL of Reagent II before use, mix thoroughly.

Standard: Liquid 1 mL×1, 40 µg/mL inorganic phosphorus standard solution, store at 4°C .

Product Description:

Soil phosphorus includes organic and inorganic phosphorus. the inorganic phosphorous can directly used by plants. Soil organic phosphorus is mineralized and decomposed into inorganic phosphorus. Determine the total phosphorus, organic phosphorus and inorganic phosphorus in the same time can fully reflect the condition of soil phosphorus nutrition.

Molybdenum blue is used to determine phosphorus. One sample of soil is taken and the content of inorganic phosphorus is determined by extraction method. The content of total phosphorus was measured by taking another sample after burning at high temperature. The content of organic phosphorus is calculated by subtracting the content of inorganic phosphorus from the total phosphorus content.

Required reagents and equipment:

Spectrophotometer/Microplate reader, micro glass cuvette/96 well flat-bottom plate, centrifuge, water bath, scale, transferpettor, 550 °C high temperature electric stove, distilled water and 100 meshes sieve (or smaller).

Procedure:

I . Sample preparation:

1. Inorganic phosphorus: Take 0.01g of fresh soil sample after 100 meshes sieve to the 1mL centrifuge tube, add 1mL of Reagent I, mix thoroughly, incubate at 45°C water bath for 1 h, centrifuge at 8000 rpm for 10min, supernatant I is ready to test the content of inorganic phosphorus.
2. Total Phosphorus: Take fresh soil sample after 100 meshes sieve, burn at 550°C for 1h, take 0.01g of sample to the 1mL centrifuge tube after cooling, add 1mL of Reagent I, mix thoroughly, incubate at 45°C water bath for 1 h, centrifuge at 8000rpm for 10min, take supernatant II to test the content of total phosphorus.

II . Determination

1. Preheat spectrophotometer/ microplate reader for 30 min, adjust wavelength to 660 nm, set zero with distilled water.
2. Adjust the temperature of water bath to 40°C .
3. Blank tube: Add 100μL of distilled water and 100μL of Reagent III to centrifuge tube, incubate at 40°C water bath for 10min after mix thoroughly. Detect the absorbance of 660 nm after cooling, record A_B .
4. Standard tube: Add 10μL of standard, 90μL of distilled water and 100μL of Reagent III to centrifuge tube, incubate at 40°C water bath for 10min after mix thoroughly. Detect the absorbance of 660 nm after cooling, record A_S .
5. Test tube: Add 10 μL of supernatant I or supernatant II, 90μL of distilled water and 100μL of Reagent III to centrifuge tube, incubate at 40°C water bath for 10min after mix thoroughly. Detect the absorbance of 660 nm after cooling, record A_T .

III. Calculation

1. Soil inorganic phosphorus ($\mu\text{mol /g}$)= $[C_S \times (A_T - A_B) \div (A_S - A_B)] \times V_T \div W = 40 \times (A_T - A_B) \div (A_S - A_B) \div W$

C_S : 40 $\mu\text{g/L}$;

W: Soil sample weight , g;

V_T : Total volume of supernatant , 1 mL.

2. Soil total phosphorus ($\mu\text{mol /g}$)= $[C_S \times (A_T - A_B) \div (A_S - A_B)] \times V_T \div W = 40 \times (A_T - A_B) \div (A_S - A_B) \div W$

C_S : 40 $\mu\text{g/L}$;

W: Soil sample weight , g;

V_T : Total volume of supernatant II , 1mL.

3. Soil organic phosphorus ($\mu\text{mol /g}$)=Soil total phosphorous- Soil inorganic phosphorous.

Note:

1. Reagent III needs to be prepared in advance for day use only. It exists possibly black solid when preparing which won't affect the outcome. Do not inhale the black solid in the course of experiment.
2. If the absorbance value is greater than 1, the sample should be diluted with distilled water.
3. The blank tube and standard tube only need to be measured 1-2 times
4. The colorimetry should be completed within 40 minutes.

Related Products:

AK0372/AK0371 Soil Phosphate(S-PHOS) Content Assay Kit

AK0173/AK0172 Soil Hydrargyrum(S-Hg) Content Assay Kit

AK0165/AK0164 Soil Available sulfur Content Assay Kit

Technical Specifications:

The detection limit: 0.3932 $\mu\text{g/mL}$

Linear range: 1-400 $\mu\text{g/mL}$