

Soil Inorganic Phosphorus (S-PHOS) Content Assay Kit

Note: The reagents have been changed, so please be aware of and follow this instruction strictly.

Operation Equipment: Spectrophotometer

Cat No: BC2880

Size: 50T/48S

Components:

Reagent I: Liquid 50 mL×1 bottle, store at 2-8°C. Dilute 10 times with distilled water before use.

Reagent II: Liquid 11 mL×1 bottle, store at 2-8°C.

Reagent III: Powder×1, store at 2-8°C. Add 10 mL of distilled water to fully dissolve. Unused reagent is still stored at 2-8°C for four weeks.

Reagent IV: Powder×1, store at 2-8°C. Add 10 mL of distilled water to fully dissolve. Unused reagent is still stored at 2-8°C for four weeks.

Preparation of reagents for phosphorus fixation: Reagent III, Reagent IV and Reagent II are mixed by the ratio of 1:1:1 to make before use. The prepared phosphorus fixation reagent should be light yellow in color. If it is colorless, the reagent is invalid, if it is blue, it is phosphorus contamination, limit to use on the same day. During the preparation, black solid may be produced, its does not affect the results, be careful not to inhale the black solid when aspirating. (Note: It is best to use new beakers, glass rods and glass pipettes, or disposable plastic containers to avoid phosphorus contamination.

Standard: Liquid 1 mL×1, 10 mmol/L inorganic phosphorus standard, store at 2-8°C.

Product Description:

Phosphorus is an essential element in plants. Plants absorb phosphorus from the soil through root. Soil phosphorus includes organic and inorganic phosphorus. Soil organic phosphorus can be further absorbed and utilized by plants only if it is mineralized and decomposed into inorganic phosphorus. In acid environment the content of inorganic phosphorus was calculated by molybdenum blue method.

Required reagents and equipments:

Spectrophotometer, centrifuge, water bath, scale, transferpettor, 1mL glass cuvette, distilled water and 100 meshes sieve.

Procedure:

I. Sample preparation:

Take 10mL centrifuge tube, add about 0.1g of air-dried soil sample weighed and sieved through a 30-50 mesh sieve, add 10mL of reagent I, shake and mix well, and then place in a 45°C water bath for 1h, 8000rpm, 25°C centrifugation for 10min, and take the supernatant and leave it to be measured.

II. Determination

1. Preheat spectrophotometer for 30 min, adjust wavelength to 660 nm, set zero with distilled

water.

2. Adjust the temperature of water bath to 40°C.
3. Preparation of 1 μmol/mL standard solution: Take 100 μL of 10 μmol/mL phosphorus standard solution, add 900 μL of distilled water, mix well, and prepare 1 μmol/mL standard solution. The standard solution should be ready for use.
4. Blank tube: Add 500μL of distilled water and 500μL of phosphorus fixation to a centrifuge tube, incubate at 40°C water bath for 10min after mix thoroughly. Detect the absorbance of 660 nm after cooling for 10 min, record A_B .
5. Standard tube: Add 50μL of standard, 450μL of distilled water and 500μL of phosphorus fixation to a centrifuge tube, incubate at 40°C water bath for 10min after mix thoroughly. Detect the absorbance of 660 nm after cooling for 10 min, record A_S .
6. Test tube: Add 50μL of supernatant, 450μL of distilled water and 500μL of phosphorus fixation to a centrifuge tube, incubate at 40°C water bath for 10min after mix thoroughly. Detect the absorbance of 660 nm after cooling for 10 min, record A_T .

III. Calculation

$$S\text{-PHOS}(\mu\text{g/g})=[C_S \times (A_T - A_B) \div (A_S - A_B)] \times V_T \div W \times 30.97 = 309.7 \times (A_T - A_B) \div (A_S - A_B) \div W$$

C_S : 1μmol/mL;

V_R : The total volume of supernatant, 10 mL;

30.97: relative atomic mass of phosphorus;

W : Soil sample weight, g.

Note:

1. If the absorbance value is greater than 1, the sample should be diluted with distilled water.
2. The colorimetry should be completed within 40 minutes.

Related Products:

- BC2870/BC2875 Soil Hydrargyrum(S-Hg) Content Assay Kit
BC2890/BC2895 Soil Phosphorus Content Assay Kit
BC0390/BC0395 Soil Dehydrogenase Activity Assay Kit
BC0860/BC0865 Soil Acid Protease Activity Assay Kit

Technical Specifications:

The detection limit: 0.5249 μg/mL

Linear range: 2-80 μg/mL