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

Cat No: NA0658

Size: 50T/48S

Components:

Reagent I: Liquid 50 mL×1, store at 4℃. Dilute 10 times with distilled water before use.

Reagent II: Liquid 11 mL×1, store at 4℃.

Reagent III: Powder×1, store at 4℃. Add 20 mL of distilled water and 10 mL of Reagent II before use and mix thoroughly.

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

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 equipments:

Spectrophotometer, centrifuge, water bath, scale, transferpettor, 550℃ high temperature electric stove, 1mL glass cuvette, distilled water and 100 meshes sieve (or smaller).

Procedure:

I. Sample preparation:

1. Inorganic phosphorus: Take 0.1g fresh soil sample after 100 meshes sieve to the 10mL centrifuge tube, add 10mL Reagent I, mix thoroughly, incubate at 45℃ water bath for 1 h, centrifuge at 8000 rpm and 25℃ 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℃ for 1h. Take 0.1g sample to the 10mL centrifuge tube after cooling, add 10mL Reagent I, mix thoroughly, incubate at 45℃ water bath for 1 h and then centrifuge at 8000 rpm and 25℃ for 10min, take supernatant II to test the content of total phosphorus.

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℃.
3. Blank tube: Add 500μL of distilled water and 500μL of Reagent III to a centrifuge tube and incubate at 40℃ water bath for 10min after mix thoroughly. Detect the absorbance of 660 nm after cooling, record A_B.
4. Standard tube: Add 50μL of standard, 450μL of distilled water and 500μL of Reagent III to a centrifuge

tube, incubate at 40℃ water bath for 10min after mix thoroughly. Detect the absorbance of 660 nm after cooling, record A_S.

5. Test tube: Add 50μL of supernatant I or supernatant II, 450μL of distilled water and 500μL of Reagent III to centrifuge tube, incubate at 40℃ water bath for 10min after mix thoroughly. Detect the absorbance of 660 nm after cooling, record A_T.

III. Calculation

1. Soil inorganic phosphorus (μg/g)=$[C_S\times(A_T-A_B)\div(A_S-A_B)]\times V_T\div W$ =$400\times(A_T-A_B)\div(A_S-A_B)\div W$

C_S: 40 μg/mL;

W: Soil sample weight，g;

V_T: Total volume of supernatant，10 mL.

2. Soil total phosphorus (μg/g)=$[C_S\times(A_T-A_B)\div(A_S-A_B)]\times V_T\div W=400\times(A_T-A_B)\div(A_S-A_B)\div W$

C_S: 40 μg/mL;

V_S: 50μL=0.05 mL;

W: Soil sample weight，g;

V_T: Total volume of supernatant，10 mL.

3. Soil organic phosphorus(μmol/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:

NA0659/NA0418 Soil Phosphate(S-PHOS) Content Assay Kit

NA0660/NA0419 Soil Hydrargyrum(S-Hg) Content Assay Kit

NA0654/NA0413 Soil Available sulfur Content Assay Kit

Technical Specifications:

The detection limit: 0.5429 μg/mL

Linear range: 2-80 μg/mL