

Acid Soil Rapidly Available Phosphorus Content Assay Kit

Note: Take two or three different samples for prediction before test.

Operation Equipment: Spectrophotometer/Microplate Reader

Cat No: BC2955

Size: 100T/96S

Components:

Extract solution: Liquid 125 mL×1 bottle, store at 4°C.

Reagent I: Powder×1 bottle, store at 4°C. Dilute with 5 mL of distilled water before use. Unused reagent can be stored for one week at 4 °C.

Reagent II: Powder×1 bottle, store at 4°C. Dilute with 5 mL of distilled water before use. Unused reagent can be stored for one week at 4 °C.

Reagent III: Liquid 5 mL×1 bottle, store at room temperature.

Standard: Liquid 1 mL×1 tube, 10 μmol/mL standard phosphorus stock solution, store at 4°C.

Phosphorus fixing reagent: Prepare reagents for determining phosphorus content: make solution as the volume ratio of H₂O: Reagent VI: Reagent VII: Reagent VIII =2:1:1:1, which should be light yellow. It shows lose efficacy if color is changed, phosphorus pollution if color is change to blue. Prepare the reagent when it will be use.

Note: It is better to use new beaker, glass rod and glass pipettes, or disposable plastic ware when making reagent to avoid phosphorus pollution.

Product Description:

Rapidly available phosphorus is a phosphorus component that can be absorbed by plants in the soil, including all water-soluble phosphorus, partially adsorbed phosphorus, easily mineralized organic phosphorus, and some dissolved precipitated phosphates.

Extraction of acid-soluble phosphorus and adsorbed phosphorus by double acid method. In acid environment the content of rapidly available phosphorus can be calculated by molybdenum blue method.

Required reagents and equipment:

Microplate reader or spectrophotometer, centrifuge, water bath, analytical balance, transferpettor, micro glass cuvette/96 well flat-bottom plate, distilled water and 20 mesh sieve.

Procedure:

I. Preparation of samples

Fresh soil samples are naturally air-dried or oven-dried at 37°C, pass through a 20 mesh sieve. Take 0.05 g of air-dried soil sample and add 1 mL of extraction solution. Shake and mix thoroughly, then incubate at 25°C water bath for 1 hour, centrifuge at 10000 g for 10 minutes at room temperature, take supernatant to be tested.

II. Determination procedure:

1. Preheat Spectrophotometer/microplate Reader or spectrophotometer for 30 minutes, adjust

wavelength to 660 nm, set zero with distilled water.

2. Standard: Dilute the 10 $\mu\text{mol/mL}$ standard solution to 3, 2, 1, 0.5, 0.25, 0.125, 0.0625 $\mu\text{mol/mL}$ with extraction solution.

3. Add reagents with the following list:

Reagent (μL)	Test tube (T)	Standard tube (S)	Blank tube (B)
Sample	20	-	-
Standard	-	20	-
Extract solution	-	-	20
Phosphorus fixing reagent	180	180	180
Mix thoroughly and standing for 30 minutes at 25°C.			
Add the mixture into micro glass cuvette/96 well flat-bottom plate, and detect the absorbance value of each tube at 660 nm and noted as A_T , A_S , A_B . $\Delta A_T = A_T - A_B$, $\Delta A_S = A_S - A_B$. Blank tubes only need to be tested 1-2 times.			

III. Calculation

1. Standard curve.

The concentration of standard solution as x-axis, ΔA_S as y-axis, obtain the equation $y=kx+b$. Take ΔA_T to the equation to acquire x ($\mu\text{mol/mL}$) value.

2. Calculation:

$$\text{Rapidly available phosphorus } (\mu\text{mol/g weight}) = x \times V_S \div (V_S \times W \div V_{ST}) = x \div W$$

V_S : Sample volume, 0.02 mL;

V_{ST} : Extract solution volume, 1 mL;

W : Soil sample weight, g.

Note:

- The working fluid (phosphorus fixing agent) should be prepared and used now. The normal color is light yellow. If it changes color or turns blue, it is invalid.
- This method has the characteristics of trace, sensitive and rapid. Therefore, the test tube or EP tube and other test equipment used for determination are strictly phosphorus free.
- It should be detected immediately after color development.
- If the absorbance value exceeds the linear range, the sample size can be increased or diluted before the determination.

Related Products:

- BC3020/BC3025 Soil Available Boron Content Assay Kit
 BC2960/BC2965 Neutral/Alkaline Soil Available Phosphorous Content Assay Kit
 BC4030/BC4035 Soil β -1,4-Glucanase Activity Assay Kit
 BC4020/BC4025 Soil Leucine Arylamidase(S-LAP) Activity Assay Kit
 BC0240/BC0245 Soil Saccharase(S-SC) Activity Assay Kit

Technical Specifications:

The detection limit: 0.0061 $\mu\text{g}/\text{mL}$

Linear range: 0.03125-6 $\mu\text{g}/\text{mL}$

