

# 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 H<sub>2</sub>O: 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, transfer pipette, 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 ( $\mu\text{L}$ )	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,  $\Delta A_S$  as y-axis, obtain the equation  $y=kx+b$ . Take  $\Delta A_T$  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:

1. 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.
2. 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.
3. It should be detected immediately after color development.
4. 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 $\beta$ -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 µg/mL

Linear range: 0.03125-6 µg/mL