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Soil Ammonium Nitrogen Content Assay Kit

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

Operation Equipment: Spectrophotometer

Cat No: AK0271

Size: 50T/48S

Components:

Extract solution: 50 mL×1, store at 4℃ .

Reagent I A: 1 mL×1, store at 4℃ and protect from the light.

Reagent I B: 4 mL×1, store at 4℃ and protect from the light. Before use, add Reagent I A into Reagent I B and mix it for standby, or prepared when the solution will be used in proportion.

Reagent II: 5 mL×1, store at 4℃ and protect from the light.

Standard: 1 mL×1, 100 μg/mL NH_4^+-N standard solution, store at 4℃ .

Product Description:

Soil ammonium nitrogen is an important component of soil available nitrogen, which can be directly absorbed and utilized by plants. Ammonium nitrogen index plays an important role in agricultural production.

In the strong alkaline medium, the ammonium nitrogen in the soil interacts with hypochlorite and phenol to form indophenol blue dye, which has a characteristic absorption peak at 630 nm, and the absorption value is directly proportional to the ammonium nitrogen content.

Required reagents and equipments:

Spectrophotometer, scale, centrifuge, 1 mL glass cuvette, oscillator, constant temperature water bath.

Protocal:

I. Sample treatment

The ratio of soil mass (g): extract solution volume (mL) is 1:5~10 (it is recommended to weigh about 0.1 g of soil sample and add 1 mL of extract solution), extract it by shaking for 1 hours. Centrifugate at 10000×g for 10 minutes at 25℃, take the supernatant and place it for test.

II. Measurement operation

1. Preheat spectrophotometer/microplate reader for 30 minutes, adjust wavelength to 630 nm, set zero with distilled water.

2. Dilute 100 μg/mL nitrogen standard solution with distilled water to 2.5 μg/mL for standby.

3. Sampling table

Reagent name (μL)	Blank tube (B)	Standard tube (S)	Test tube (T)
Sample	-	-	400
Distilled water	400	-	-
Standard	-	400	-
Reagent I	80	80	80
Reagent II	60	60	60
Mix well and place at room temperature of 25℃ for 30 minutes.			
Distilled water	460	460	460
After fully mixing, measure the absorption value at 630 nm, and record it as A_B, A_S and A_T . Calculate $\Delta A_S = A_S - A_B$, $\Delta A_T = A_T - A_B$.			

III. Calculation:

NH_4^+-N (μg/g Soil)= $\Delta A_T \div \Delta A_S \times C_S \times V_E \div W = 2.5 \times \Delta A_T \div \Delta A_S \div W$

C_S : Concentration of standard solution, 2.5 μg/mL;

V_E : Volume of extract solution, 1 mL;

W: Sample mass, g.

Note:

1. Soil after Air-drying or drying can easily cause changes in NH_4^+-N content, so it is recommended to use fresh soil for determination. The samples should be sealed, transported and stored at 4°C after collection, and the analysis should be completed within 3 days. Otherwise, it should be stored in small pieces at -20°C (deep freezing) and can be stored for several weeks. When determining the NH_4^+-N content of deep freezing, the temperature and time of thawing should be controlled. When thawing at room temperature, the sample must be thawed, homogenized and extracted within 4 hours; if it is thawed at 4°C, the thawing time should not exceed 48 hours.

2. If you want to compare the NH_4^+-N content between different samples, you need to dry the soil sample and calculate it by dry weight before comparing.

3. When ΔA is greater than 0.7, it is recommended to dilute the sample with distilled water for determination.

4. The Reagent I shall be stored at 4℃ and protect from light and cannot be used after discoloration.

Technical Specifications：

Minimum Detection Limit：0.0646 ug/mL

Linear Range ：0. 156-5 ug/mL

Related products：

AK0308/AK0307　Soil Nitrate Nitrogen Content Assay Kit

AK0165/AK0164　Soil Available sulfur Content Assay Kit

Experimental example:

1. Take 0. 1g clover to 1ml extract solution, shock and centrifuged for 1 hour, operate as the procedure after taking the supernatant, test and calculate $\Delta A_T = A_T - A_B = 0.165 - 0.02 = 0.145$, $\Delta A_S = A_S - A_B = 0.37 - 0.02 = 0.35$, calculate content by sample weight: NH_4^+-N (μ g/g weight)= $2.5 * \Delta A_T \div \Delta A_S \div W = 2.5 \times 0.145 \div 0.35 \div 0.1 = 10.36$ μ g/g weight.

2. Take 0. 1g forest soil to 1ml extract solution, shock and centrifuged for 1 hour, operate as the procedure after taking the supernatant, test and calculate $\Delta A_T = A_T - A_B = 0.145 - 0.02 = 0.125$, $\Delta A_S = A_S - A_B = 0.37 - 0.02 = 0.35$, calculate content by sample weight: NH_4^+-N (μ g/g weight)= $2.5 * \Delta A_T \div \Delta A_S \div W = 2.5 \times 0.125 \div 0.35 \div 0.1 = 8.93$ μ g/g weight.