



## PLANT TISSUE TEST KIT NITRATES, PHOSPHORUS, POTASSIUM

**MODEL PT-3R • CODE 5026**

QUANTITY	CONTENTS	CODE
2 x 120 mL	*Universal Extracting Solution, Concentrated	*5227-J
30 mL	*Nitrate Reagent #1	*5146-G
30 g	*Nitrate Reagent #2 Powder	*5147-G
30 mL	*Phosphorus Reagent #2	*5156-G
50	*Phosphorus Reagent #3 Tablets	*5157-H
50	*Potassium Reagent B Tablets	*5161-H
120 mL	*Potassium Reagent C	*5162-J
1	Funnel, plastic	0459
1	Filter Papers, (100 sheets)	0465
1	Test Tube, w/cap, "Potash A"	0245
1	Test Tube, "Phosphorus B"	0244
2	Test Tubes, extraction, w/caps, 7 & 14 mL	0704
1	Spot Plate, plastic	0159
1	Spoon, 0.5 g	0698
1	Stirring Rod, plastic	0519
2	Pipets, 1.0 mL, plastic	0354
1	Pipet, transfer, plastic	0364
1	Pipet, plain, glass, w/cap	0341
1	Pipet, plastic, w/cap	0392
1	<i>LaMotte Soil Handbook</i>	1504

**\*WARNING:** Reagents marked with a \* are considered hazardous substances. Material Safety Data Sheets (MSDS) are supplied for these reagents. For your safety read label and accompanying MSDS before using.

To order individual reagents or test kit components, use the specified code number.

Distilled water should be used in the extraction procedure. Natural waters may be used only if they are free of nitrates (i.e., a nitrate test is performed on the water sample blank gives no result). Phosphorus and potassium, if present, are usually present in trace amounts only.

## **COLLECTION & PREPARATION OF PLANT TISSUE SAMPLES**

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Fresh plant material should be obtained from the growing crop, both from normal and problem plants. It is important to test both healthy and problem plants, as the tests are most meaningful when used in a comparative manner. Select small lots of the leaf petioles, or succulent portion of the stem, in the part of the plant most affected by any observable abnormal symptoms. Using a clean, sharp knife or razor blade, cut the material into fine bits of not more than  $\frac{1}{8}$  to  $\frac{1}{6}$  inch in length and thickness. An amount of material is used that will fill the Extraction Tube (0704) to the bottom mark when placed in the tube without packing.

## **EXTRACTION PROCEDURE**

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1. Fill the Extraction Tube (0704) to the lower mark with the plant tissue to be tested.
2. Use a 1 mL pipet (0354) to add 2 mL of \*Universal Extracting Solution, Concentrated (5227).
3. Fill the tube to the upper mark with distilled or Nitrate-free water.
4. Cap and shake vigorously for 5 minutes.
5. Use a sheet of filter paper (0465) and the funnel (0459) to filter the tissue extract into a clean Extracting Tube.

## **NITRATE NITROGEN TEST**

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1. Use a clean 1 mL pipet (0354) to transfer 1 mL of the filtered tissue extract to one of the larger depressions on the spot plate (0159).
2. Use the plastic pipet with screw cap (0392) to add 10 drops of \*Nitrate Reagent #1 (5146) to the filtrate in the spot plate.
3. Use the 0.5 g spoon (0698) to add 0.5 g of \*Nitrate Reagent #2 Powder (5147). Stir thoroughly with a Stirring Rod (0519).
4. Allow to stand 5 minutes for full color development. Then observe the color. Compare resulting color from the healthy plant test with the problem plant test.

### **RESULTS:**

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Dark Pink Color	Abundant nitrate
Light Pink Color	Adequate nitrate
No color	No nitrate reserve, probably deficient

## **PHOSPHORUS TEST**

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1. Fill the "Phosphorus B" Tube (0244) to the mark with the filtered tissue extract.
2. Use the glass pipet with screw cap (0341) to add 6 drops of \*Phosphorus Reagent #2 (5156) to the tube containing the filtrate.
3. Add one \*Phosphorus Reagent #3 Tablet (5157). Cap and shake until tablet dissolves.
4. Immediately note the color. Compare the color development from healthy and problem plants.

### **RESULTS:**

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Deep Blue Color	Abundant phosphorus
Light Blue Color	Adequate phosphorus
Yellow to Colorless	Deficient to Extremely Deficient phosphorus

## **POTASSIUM (POTASH) TEST**

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1. Fill the "Potash A" Tube (0245) to the lower mark with the filtered tissue extract.
2. Add one \*Potassium Reagent B Tablet (5161). Cap and shake until tablet dissolves.
3. Use the transfer pipet (0364) to add \*Potassium Reagent C (5162) until the tube is filled to the upper mark. Allow the \*Potassium Reagent C to run slowly down the side of the tube. Swirl tube gently to mix. A precipitate indicates the presence of potassium. The heavier the precipitate, the more potassium is present. Compare formation of precipitate in healthy plant tests and problem plant tests.

### **RESULTS:**

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Heavy Precipitate	Adequate to abundant potassium (potash)
Medium Precipitate	Possible potassium deficiency
Trace Precipitate	Deficient potassium
No Precipitate	Extremely deficient potassium

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