



COMPLETE ENVIRONMENTAL SOLUTIONS

Air, Sound, Water, Soil Pollution Monitoring Instruments Manufacturing, Sales, Servicing & Calibration
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PRODUCT LIST

AIR POLLUTION MONITORING INSTRUMENTS

- RESPIRABLE DUST SAMPLER (PM10)
- FINE PARTICULATE SAMPLER (PM2.5)
- COMBO SAMPLER (PM10+PM2.5)
- STACK SAMPLER
- HANDY DUST SAMPLER
- PERSONAL SAMPLER
- BENZENE SAMPLER
- LOW VOLUME SAMPLER
- GASEOUS POLLUTANT SAMPLER
- THERMO ELECTRICALLY COOLED GASEOUS ATTACHMENT
- THERMO ELECTRICALLY COOLED GASEOUS ATTACHMENT
- SOUND LEVEL METER
- WEATHER MONITOR
- LUX METER • VIBRATION METER
- TOP LOADING CALIBRATOR
- FLOW CALIBRATOR
- TIME CALIBRATOR
- SOUND LEVEL CALIBRATOR

LAB INSTRUMENTS

- BIO SAFTY CABINET
- FUME HOOD
- BOD INCUBATOR
- COD DIGESTOR
- AUTO CLAVE
- BIOLOGICAL INCUBATOR
- HOT AIR OVEN • WATER BATH
- HUMIDITY CHAMBER
- HOT PLATE
- DISTILLATION UNIT

SOIL TESTING KIT FOR NITROGEN



OVERVIEW

Purpose: Nitrogen (N) is important for plant growth and development, and of the macronutrients, is often the one that is most limiting. Soil nitrate (NO₃) and ammonium (NH₄) are both forms of inorganic nitrogen that are readily available for use by plants. They are formed from the mineralization (by microorganisms) of organic forms of N such as soil organic matter, crop residue, and manures. Soluble fertilizers also provide nitrate and ammonium in forms that can be used by plants. Nitrogen in the soluble forms is mobile in the soil, and nitrate can be leached below the root zone of the crop. Both forms can be transported off site in runoff due to rain or irrigation, which contributes to eutrophication of surface waters due to excess growth of algae and microorganisms. Knowing the content of plant available nitrogen is important to assure that the crop has enough for adequate growth, but excess nitrogen is not running off the field.

Tools: the following procedure used the LaMotte garden soil test kit model EM, Code 5934. Other methods of measuring nitrogen are also possible. Some test kits are more accurate than others. Before using a particular “quick test” method, compare it to laboratory results. The tests recommended in this handbook have all been compared to KSU soil test laboratory results, and have been deemed satisfactory for initial screening purposes.

Procedure:

1. Fill a test tube to line 7 (7 ml) with Nitrogen Extracting Solution.
2. Use the 0.5 g spoon to add two measures of soil sample.
3. Cap and gently shake for one minute.
4. Remove cap and allow soil to settle.
5. Use a clean pipet (dropper with the red bulb) to transfer the clear liquid to a second clean test tube. To avoid agitation of soil, squeeze the bulb of the pipet before inserting the tip into the liquid. Release the bulb slowly to draw clear liquid into the pipet. Do not pull up any soil. Fill a second tube to line 3 with liquid.
6. Use the 0.25 (smaller) spoon to add two measures of nitrogen indicator powder to the soil extract in the second tube.
7. Cap and gently shake to mix. Wait 5 minutes for the pink color to develop above the powder.
8. Match the test color with the nitrogen color chart. Record as nitrogen (N) on the data sheet

- HEATING MENTLE
- KJELDAL ASSEMBLY
- DEEP FRIZZER
- PH METER
- TDS METER
- CONDUCTIVITY METER
- SPECTROPHOMETR
- WEIGHING BALANCE
- MOISTURE ANALYZER
- DIGITAL ULTRASONIC CLEANER
- DO METER
- GRADENT THERMAL CYCLEAR PCR
- ICE FLAKER
- ICE MAKER
- PROBE SONICATOR
- DIGITAL VISCOMETER
- DIGITAL PRESSURE INDICATOR
- LON SELECTIVE ELECTRODES
- POLARIMETERS
- VISCOMETERS
- PROBE SONICATOR-TOUCHSCREEN
- LON WITH PH METER-5 POINTS
- PH ELECTRODES
- MULTI PARAMETER / DO METER
- REFRACTO METERS
- GRADIENT THERMAL CYCLER
- ULTRASONIC CLEANERS
- CERAMIC HOTPLATE MAGNETIC STIRRER
- DIGITAL PIPETTES
- REFRIGERATED CIRCULATING BATH
- DIGITAL WATER BATH
- ANALOG MULTIMETER
- DIGITAL MULTIMETER
- BENCH TYPE TRUE RMS DIGITAL MULTIMETER
- AC CLAMP METER
- AC/DC CLAMP METER
- POWER CLAMP METER
- AC LEAKAGE CURRENT TESTER
- EARTH LEAKAGE
- INSULATION RESISTANCE TESTER
- PHASE ROTATION METER
- VOLTAGE DETECTOR
- DIGITAL CAPACITANCE METER
- DIGITAL LCR METER
- DIGITAL MILLIOHM METER
- LUX METER

Interpretation - LaMotte Nutrient Tests (N, P and K): The interpretive guides provided with the kits give results as high, medium or low. Other values are possible, such as zero, trace, medium high, etc. Most commercial soil test labs provide results in units such as lb/a or ppm. Use the following table to convert the LaMotte colorimetric values of low, medium, and high to approximate ranges in ppm (parts per million). Then use ppm values to determine if additional nutrition is required for the crop you are growing.

	Nitrogen		Phosphorus		Potassium	
LaMotte Level:	Nutrient level range in ppm					
Low	0-15		0-25		0-60	
Medium	15-30		25-50		60-100	
High	30+		50+		100+	

Generally speaking, if a soil falls in the low range for a nutrient, crops will be deficient, and can be improved either in quantity or quality by the supplementation of the deficient nutrient. The medium range is usually an adequate level for most crops. The high range is also adequate for crop growth and yield, and may be necessary for heavy feeding crops such as corn. However, for other crops this could be excessive and could lead to nutrient pollution in surface water run-off. KSU Extension guidelines vary slightly from the LaMotte table above, with the Horticultural recommendations slanted slightly higher than the table values listed above (need a higher level of each to be in the “medium” and “high” categories). The Agronomy, or field crops recommendations on the other hand, are consistently lower than the LaMotte guidelines. Thus, this table may be used with the caveat to consult KSU publications and expertise for the specific crops you are growing. However, this table combined with the LaMotte tests can be used to determine if the nutrient levels are about right, or are too high or too low. Use the following table to score your phosphorus, nitrogen, and potassium test results. A score of 4 is the best rating, 3 is good, 2 is fair, and 1 is poor.

4	3	2	1
Nutrient levels are in the “medium” range.	Nutrient levels slightly above or below “medium.”	Nutrient in question is “low” or “medium low,” and may be deficient.	Nutrient level is “medium high” or higher, and may be contributing to water pollution, even though crop growth is adequate.

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