GB
USA

HANNA instruments

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HI 3895
Quick Soiltest

HANNA Quick Soiltest for happy plants:

Hanna Quick Soiltest provides you with an economical way to rapidly test the pH as well as the three basic elements needed for a healthier plant: nitrogen (N), phosphorus (P) and potassium (K).

pH. Soil can be acid, neutral, or alkaline. Each plant has a range of pH in which it thrives and most plants prefer conditions near the neutral mark (pH 5.5-7.5). There are however plants that prefer acid or alkaline environments. The solubility of the nutrients, that is the ability of the plants to absorb them, depends largely on their pH value. The soil microbiological activity is also pH dependent. Most bacteria, specially those putting nutrients at the plants' disposition, prefer moderately acid or slightly alkaline conditions. The pH level hence influences the fertility of the soil.

Nitrogen (N). Nitrogen is an indispensable element for the growth of vegetation and is a key factor in fertilization. A correct quantity of Nitrogen allows a healthy growth of the entire structure and in particular creates a thriving and greener plant. An excess of Nitrogen on the other hand, weakens the plant's resistance creating an unbalanced relationship between the green parts and the stems and trunk.

Phosphorus (P). Phosphorus contributes to the formation of buds, roots and blooming as well as lignification. A lack of phosphorus results in a stifling of plant.

Potassium (K). Potassium plays an important role in how much water is absorbed by the roots and the regulation of cellular activity. In addition, Potassium makes plants more resistant to disease and yields a positive effect on the color and fragrance in flowers.

FRUIT & VEGETABLE - Testing the nitrogen and phosphorus level in your soil is important, especially before seeding and replanting. While root vegetables need phosphorus, leafy plants require more Nitrogen. Potassium, on the other hand, helps increase the quality of the crop. With the HANNA Quick Soiltest, you keep these three important elements under control.

FLOWERS & SHRUBS - The right quantity of potassium is the key factor in ensuring beautiful and fragrant flowers. The other elements play an important role too in achieving rapid and harmonious growth.

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LAWNS - A lush lawn is the result of care and attention. In addition to tilling and irrigation, the pH and nitrogen levels need regular checks. So, what better than the HANNA Quick Soiltest in the quest for thicker and greener lawns.

FRUIT & DECORATIVE TREES - Trees are the most appealing feature of our gardens. Nitrogen and phosphorus help in speeding up the growth of young plants, encouraging abundance of foliage and strengthening the trunk and the roots. Potassium, on the other hand keeps, the plants in tip top condition by protecting them from diseases.

BONSAI & HOUSEPLANTS - Every time a houseplant, but in particular a bonsai is potted, the choice of soil mixture is of prime importance. Having prepared the mixture, the HANNA Quick Soiltest will in a matter of minutes test the level of pH and other elements ensuring a livelier plant.

WHEN TO TEST YOUR SOIL

Your soil should be tested prior to seeding, planting and fertilizing as well as when other soil, manure or compost has been added and not only when the plants do not seem to be in a tip top condition (yellow leaves or stunted growth).

SAMPLING

1) Extracting Soil Sample
- With a large field, take 1 or 2 samples per 1000 m^2 (0.25 acre) of homogeneous areas.
- Even for smaller areas, 2 samples are recommended (the more the samples, the better the end-results).
- If you have a small garden or plot, 1 sample is sufficient.

2) Avoid extracting samples from soil presenting obvious anomalies.

3) Sample quantity: take the same quantity of soil for each sample. For example, use bags with similar dimensions (1 bag per sample).

4) Depth of extraction:
- General: dig and discard the 5 cm (2") of topsoil
- For lawns: take the sample at a depth of 5 to 15 cm (from 2" to 6").
- For other plants (flowers, vegetables, shrubs): from 20 to 40 cm of depth (8" to 16")
- For trees: Samples from 20 to 60 cm of depth (8" to 24").

5) Mix all the samples together to obtain a homogeneous mixture of soil.

TEST PROCEDURE

Reading the Color-Card

The pH, phosphorus (P_2O_5), and nitrogen (NO_3) tests use colorimetric methods of testing. The color developed corresponds to the soil fertility. To figure out the fertility, the color which appears must then be compared against the Color-card.

To match the color, hold the tube containing the test solution approximately 2 cm away from the color-card. Stand with a light source behind the card and match the test tube color to that of the Color-card to read: Trace, Low, Medium or High. If the color of the test tube falls between two standard colors, e.g. between Medium and High, the test result is then Medium-High. Eight different readings are possible, Trace, Trace-Low, Low, Low-Medium, Medium, Medium-High, High, and very-High.

The potassium (K_2O) test utilizes a turbidimetric method. To obtain the test results, rest the tube against the Color-card over the reading area. Stand with the light source behind your back. Start at Trace, look through the tube, and go to Low, Medium or High until you see the white line in the middle of the reading area of the Color-card. The test result is obtained in Trace, Low, Medium or High.

Performing the test

pH test. Add half a teaspoon of soil to the test tube and fill it to the lower graduation mark with water (2.5 mL): use the graduated card for the measure. For best results, use bottled or distilled water. Add the content of one packet of **HI 3895pH-0** pH reagent, replace the cap and shake **gently** for 30 seconds. Allow the tube to stand for 5 minutes. Match the color with the pH color-card and read the pH value.

Nitrogen (N) - Phosphorus (P) - Potassium (K):

General Extraction Procedure [for the P, N, and K tests]

Add the following to a clean can or a coffee jar:

Field soil:	1.5 cup of soil and 8 cups of water
Garden soil:	1 cup of soil and 8 cups of water
Greenhouse soil:	1 cup of soil and 16 cups of water

For best results, use bottled or distilled water. Stir or shake gently for at least one minute and make sure that all the soil is moistened. Allow to stand until the soil settles (from 30 minutes to 24 hours depending on the soil texture). The clearer the extract becomes, the better the results, however, a little cloudiness will not affect the accuracy of the test.

Nitrogen (NO_3) test. Use the pipette to transfer 2.5 mL of the clear general soil extract (above) to a clean test tube [*]. Add the content of one packet of **HI 3895N-0** Nitrogen reagent to the tube, replace the cap and shake well for 30 seconds to dissolve the reagent. Allow the tube to stand for 30 seconds, match the pink color with the Nitrogen color-card.

Phosphorus (P_2O_5) test. Use the pipette to transfer 2.5 mL of the clear general soil extract (see above) to a clean test tube [*]. Add the contents of one packet of **HI 3895P-0** Phosphorus reagent to the tube, replace the cap and shake well for 30 seconds to dissolve the reagent. Match the blue color against the Phosphorus color-card for the P concentration.

Potassium (K_2O) test. Use the pipette to add 0.5 mL of the clear general soil extract (above) to a clean test tube [*]. Fill the tube to the lower graduation mark (2.5 mL) with water. Add the content of one packet of **HI 3895K-0** Potassium reagent to the tube, replace the cap and shake well for 30 seconds to dissolve the reagent. Match the test tube against the Potassium reading-card.

[*]: *Don't transfer any soil. To avoid agitation of the soil, squeeze the bulb of the pipette before inserting the pipette into the soil extract solution.*

HEALTH & SAFETY

The chemicals contained in this test kit may be hazardous if improperly handled. Read carefully Health & Safety Data Sheets before performing the tests.

Health and safety data sheets are available on line: www.hannainst.com

CONTENTS

Each kit is supplied with:
- 40 powder packets (10 each for pH, N, P and K);
- 1 plastic pipette (1 mL);
- 4 test tubes;
- 4 Color Cards;
- 1 Graduated Card.