

Soil Tester Standard LU 1601 D 10: 5 tubes, each with 2 capsules (4x pH, 2x N, 2x P, 2 x K)

A list for complete instructions for adjusting soil pH, fertilization guidelines and pH preference of 450 plants. **Colors of the capsules:** pH = green, N = violet, P = blue, K = red

Why test your soil? Plants need food (nutrients) for healthy growth. **Nitrogen, Phosphorus and Potash** (N,P and K for short), play a vital role in plant growth just as vitamins, minerals, carbohydrates and protein do in our health.

How to test your soil? For gardeners already familiar with soil testing you'll appreciate the unique, patented, specially designed „color comparator“ and capsule system, that make quick work of testing. For those of you new to soil testing, you will appreciate this easy, fast and fun way to achieve better growing results from your gardening efforts! Everything is color-coded, including the color comparator films and capsules All you do is take a sample of soil, mix with water, transfer some of the solution to the color comparator, add powder from capsule, shake and watch the color develop. Then, note your test results. Fast, easy and it only takes a few minutes!

When to test your soil? Soil should be tested periodically throughout the growing season, but it is especially recommended to test before planting in Spring and when preparing beds in Fall. And, if you feel your plants are not growing well, a soil test may help.

N = Nitrogen is synonymous with plant nutrition. It is directly responsible for producing leaf growth and green leaves. A deficiency causes yellow leaves and stunted growth. Too much nitrogen causes overabundant foliage with delayed flowering the plant becomes subject to disease and its fruit if of poor quality.

P = Phosphorus Growing plants need phosphorus. It is the major constituent of plant genetics and seed development. A deficiency causes stunted growth and seed sterility. Phosphorus aids plant maturity, increases the seed yield, increases fruit development, increases vitamin content and aids the plant's resistance to disease and winterkill.

K = Potash strengthens the plant. It helps form carbohydrates and promotes protein synthesis. It will improve the color and flavor of fruit. It further aids early growth, stem strength and cold hardiness. Plants deficient in potash are usually stunted and have poorly developed root systems. Leaves are spotted, curled and appear dried out at the edges. Yields for potash deficiency are low.

pH Plants also need the correct pH (acidity/alkalinity) level which controls how well plants utilize the nutrients available in your soil. All plants have a pH preference, so it is important to know the pH level of your soil. You can then choose plants with the same pH preferences, avoid those that will not do well in your soil or know how to go about supplying their special growing needs. By testing your soil, you determine its exact condition so that you can fertilize and/or adjust pH more accurately, effectively, and economically.

Preparing your soil samples For lawns, annuals or house plants, take the soil sample from about 2-3" below the surface. For perennials especially shrubs, vegetables and fruit, the sample should be from 4" deep. Avoid touching the soil with your hands. Test different areas of your soil, as it may differ according to past cultivation, underlying soil differences or a localized condition. It is preferable to make individual tests on several samples from different areas than to mix the samples together. Place your soil sample into a clean container. Break the sample up with the trowel or spoon and allow it to dry out naturally. This is not essential, however it makes working with the sample easier. Remove any small stones, organic material such as grass, weeds or roots and hard particles of lime. Then crumble the sample finely and mix thoroughly.

pH-Test

1. Take a soil sample from about 4" below the surface.
2. Remove cap from one of the green capped tubes. Remove the green capsules.
3. Fill tube with soil to the first line.
4. Carefully open a green capsule and pour powder into the tube
5. Add water (preferably distilled) to the fourth line.
6. Cap tube and shake thoroughly.
7. Allow soil to settle and color to develop for about a minute.
8. Compare color of solution to the pH color chart. Repeat for remaining capsules.

Nitrogen, Phosphorus and Potash Tests

1. Take a soil sample from about 4" below the surface. Fill a clean jar or can with 1 part soil and 5 parts water. Thoroughly shake or stir the soil and water together for at least one minute and then allow the mixture to stand undisturbed until it settles (30 minutes to 24 hours, dependent on soil). A fine clay soil will take much longer to settle out than a coarse sandy soil. The clarity of the solution will also vary, the clearer the better, however cloudiness will not affect the accuracy of the test.
2. Remove the cap from the tube. Remove colored capsules. (Please note that the color of the capsules should match the color of the tube cap.) Fill the tube to the fourth line with liquid from your soil mixture. Avoid disturbing the sediment.
3. Carefully separate the two halves of one of the capsules. Pour the powder into the tube.
4. Cap the tube and shake thoroughly. Allow color to develop for about 10 minutes.
5. Compare color of solution to the appropriate portion of the plant food color chart. For best results allow daylight, not direct sunlight, to illuminate the solution. Note your results. Repeat for remaining capsules.

To raise or lower pH of your soil Raising and lowering pH is not an exact science and most plants have a reasonably wide tolerance, certainly to within 1 pH point. Consult the enclosed pH Preference List and you will see that the majority can manage well on a pH around 6.5 but some need an alkaline soil and some a particularly acid soil. Altering pH takes time so do not expect rapid changes; rather, work steadily towards giving a plant its ideal conditions.

Adjusting pH It can be adjusted to provide more suitable growing conditions for the different plants you, wish to grow. Or, you can leave the pH of the soil as it is and select plants that like the level revealed by your test. Once you have your pH reading, check the enclosed pH Preference List for the pH levels of over 450 popular plants, trees, shrubs, vegetables and fruits. If your pH reading differs significantly from the list's recommended levels, follow instructions below for adjusting soil pH. You can correct pH at any time of the year but it is best to start in the Fall and check progress in the Spring. After working to adjust your soil, retest for pH level in 40 – 60 days. If results are still significantly off, retreat your soil, not exceeding recommended application levels. Allow one month to pass between adding lime and adding fertilizers.

Sandy soils: A light, coarse soil comprised of crumbling and alluvial debris. **Loam soils:** A medium friable soil, consisting of a blend of coarse (sand) alluvium and fine (clay) particles mixed within fairly broad limits with a little lime and humus. **Clay soils:** A heavy, clinging, impermeable soil, comprised of very fine particles with little lime and humus and tending to be waterlogged in winter and very dry in summer.

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Adjusting soil pH – How much to apply? Amounts listed are pounds per 100 square feet. Do not add more than 5lbs. of lime or sulfur in one application.

Material	pH Change	Sandy	Loamy	Clay
Dolomitic or calcic limestone	+0.5 unit (0.5 pH)	2.5	5.0	5.5
	+1.0 unit (1.0 pH)	5.0	8.5	11.0
Hydrated Lime	+0.5 unit (0.5 pH)	1.5 – 2.0	3 – 4	4.0 – 4.5
	+1.0 unit (1.0 pH)	3.5 – 4.0	6.0 – 6.5	8.0 – 8.5
Iron Sulfate	+0.5 unit (0.5 pH)	0.75	1.5	2.0
	+1.0 unit (1.0 pH)	1.5	3.0	4.0
Aluminum Sulfate	+0.5 unit (0.5 pH)	0.5 – 0.75	1 – 1.25	1.5
	+1.0 unit (1.0 pH)	1 – 1.25	2.25	3.0

Fertilizer Recommendations - Feeding prior to planting (Amounts listed are ounces per 100 square feet, (ounces referred to are by weight)

Adequate reserves of plant food should be available in the soil before planting vegetables, preparing a seed of flower bed, sodding or seeding a lawn, or planting shrubs and trees. To make up any deficiencies, apply fertilizers from the following chart according to your soil test result.

Test Results	(0) Depleted	(1) Deficient	(2) Adequate	(3+4) Surplus/Sufficient
Nitrogen Fertilizers (%N)				
Dried Blood (11%)	36	19	6	N/A
Nitrate of Soda (16%)	27	14	3	N/A
Phosphate Fertilizers (%P)				
Bone Meal (19%)	27	14	6	N/A
Triple Superphosphate (46%)	10.25	5.25 – 5.5	2.25	N/A
Potash Fertilizers (%K)				
Muriate of Potash (60%)	8.75 – 9	4.75 – 5	2.25- 2.5	N/A

Feeding establishes plants and beds

Based on your test results, apply the appropriate fertilizers(s) in the amounts recommend in the following chart

Recommendations for N, P and K results

	(0) Depleted			(1) Deficient			(2) Adequate		
	N	P	K	N	P	K	N	P	K
Lawn	22 – 22.5	0.75 – 1	4.75 – 5	14 – 14.5	1 – 1.5	2.25 – 2.5	3.75 – 4	0	0
Fruit	14 – 14.5	6.5	13.5 – 14	7.75 – 8	4 – 4.25	8.75 – 9	3.75 – 4	2.25	4.75 – 5
Flower	14 – 14.25	6.5	13.5 – 14	7.75 – 8	4 – 4.25	8.75 – 9	3.75 – 4	2.25	4.75 – 5
Shrubs (flowering)	14 – 14.25	8.25 – 8.5	13.5 – 14	7.75 – 8	4 – 4.25	8.75 – 9	3.75 – 4	1 – 1.25	4.75 – 5
Shrubs (foliage)	22 – 22.5	10.5 – 10.75	8.75 – 9	14 – 14.5	5.25 – 5.5	4.75 – 5	3.75 – 4	2.25	2.25 – 2.5
Veggies (root)	14 – 14.25	12 – 12.25	8.75 – 9	14 – 14.5	5.25 – 5.5	4.75 – 5	3.75 – 4	3	2.25 – 2.5
Veggies (leafy)	28.25 – 29	10.25	8.75 – 9	14 – 14.5	5.25 – 5.5	4.75 – 5	7.75 – 8	2.25	2.25 – 2.5
Tree	14 – 14.5	10.25	8.75 – 9	7.75 – 8	5.25 – 5.5	4.75 – 5	3.75 – 4	2.25	2.25 – 2.5
General Feed	22 – 22.5	8.25 – 8.5	8.75 – 9	10.5 – 11	4 – 4.25	4.75 – 5	3.75 – 4	1 – 1.25	2.25 – 2.5

(3&4) Surplus / Sufficient: N/A // The recommendations are based on the flowing fertilizers sources: Nitrate of Soda (16% N), Triple Superphosphate (45% P₂O₅) and Muriate of Potash (60% K₂O). The amounts listed are oz./100 sq. ft. (ounces referred to are by weight, not volume). If you wish to use other fertilizer, check the package for the % of nutrients for N, P, K and adjust the application level accordingly.

Special recommendations for lawns (Amounts listed are pounds per 1000 square feet)

For a new lawn, pay special attention to soil preparation before planting. Proper soil preparation for any size lawn will have a significant impact on the amount of water and care it demands in the future. Till the soil to a depth of at least 12" and incorporate plenty of organic material (9" or more). Test your soil of pH and adjust to the levels recommended on pH Preference List for your type of grass. Refer to the previous chart for recommend lime or sulfate applications. For established lawns, Nitrogen is the most nutrient to promote lush growth and deep, green color. Phosphorus and Potash, in lesser quantities, are also important for strong root formation and growth. Compound fertilizers will supply all 3 nutrients, or you can select an individual fertilizer, such as Nitrate of Soda. The following chart gives recommend application levels specifically for lawns, based on your Nitrogen soil test results.

Fertilizer Type	(0) Depleted	(1) Deficient	(2) Adequate	(3&4) Surplus/Sufficient
24 – 4 – 4	4.0 lbs	2.0 ls	1.0 lbs	N/A
24 – 3 – 4	3.1 lbs	1.55 lbs	.77 lbs	N/A
30 – 4 – 4	3.0 lbs	1.5 lbs	.75 lbs	N/A

Safety and Hygiene Dispose of test solutions by rinsing down the sink. Empty gelatin capsules should be disposed of immediately with household waste. Remove the color charts. Wash the comparators and caps in war, soapy water immediately after each use. Make sure any sediment or color staining is removed. Rinse well and dry. Replace the color charts on the appropriate comparators. Each bag of capsules should be stored inside its comparator. Fit the caps on each comparator. Place all components back into the package. The blister pack has been specially designed to be reuses as a storage container. Store your kit in clean, dry conditions, indoors. The powders are safe in normal domestic terms but like all chemicals and pharmaceuticals, they should be put away and kept out of reach of children.

Try to avoid touching the powders. Always wash your hands thoroughly after making your tests. Do not eat, drink or smoke while using the soil test kit. Keep powders away from food, drink and animal feed. If taken internally, drink copious amounts of water and seek medical advice.

Cautions Where a lot of fertilizer is needed to correct one plant food, divide the applications over several weeks. Do not add lime and fertilizer together; lime first. Allow at least one month to pass before applying fertilizer. Retest 30 days after applying fertilizer.