A close-up photograph of several small green seedlings with two leaves each, growing out of dark, rich soil. The seedlings are in various stages of growth, with some being taller and more developed than others. The soil is dark and appears moist. The background is slightly blurred, focusing attention on the plants in the foreground.

The Ultimate Guide to Soil pH

- Take the test, what do your results mean?
- Things you need to know about soil pH
- Increasing + decreasing soil pH how to

How to use the test strips and important notes:

1. Create your water / soil solution by adding 1 part water and 1 part soil. Distilled water is highly recommended.
2. For the best readings, make sure the solution is mostly clear. Shaking well and waiting for 1-2 hours usually works. Best method is to filter most of the soil out before testing.
3. Dip strip into the solution for 2 seconds, ensuring all 4 pads are covered.
4. Place strip on a piece of tissue paper for 60 seconds to allow accurate readings.
5. Compare against the color chart the closest matching 4 colors. Take action if needed and see ebook for more info.

Best practices:

Make sure you use a mixture of soil from the area you want to test so that you get a good sample for overall soil pH. You can also perform multiple tests to test multiple areas around your indoor / outdoor plants. You can change up the ratio of the soil water solution to whatever you feel is best / most easy to use. There are many good guides online which may help you use the product, or you can send us an email at any time with specific questions.

Test strips are very sensitive so please store them properly to ensure their long term accuracy by:

- Never removing the desiccant packet
- Keeping the strips away from light and moisture
- Keeping the cap on tight between each use
- Storing well sealed in a cool dry place (especially not in bathroom or by water source)

If you believe the test strips to be defective or they have all turned one color please contact us and we will help you fix the problem.



FIRST OF ALL, **thank you so much for choosing our soil pH test strips.** We hope you get the results you were looking for and that this product and ebook makes your life easier and healthier!

As with many businesses, product reviews are very important for us in spreading the word about us and our products. If you have a minute we would love it if you could [please leave us a review on Amazon](#). Thank you so much in advance for your support! – If you have any other questions or concerns, you can contact us at support@jnwdirect.com.

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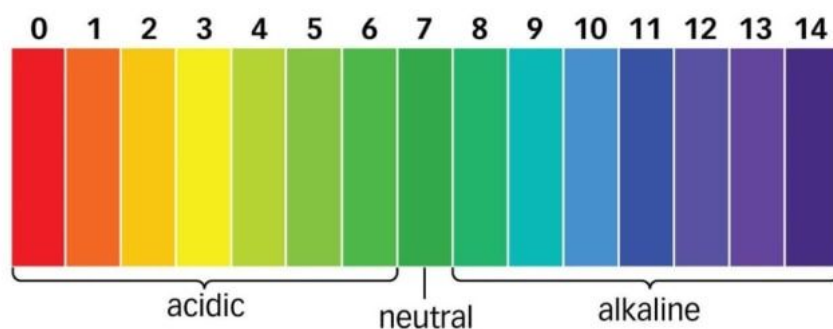
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5. The importance of the pH of your soil
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THE ULTIMATE GUIDE TO SOIL pH

In this ebook we will look at why soil pH is so important and look at the optimal levels of pH for a wide range of plants. But first let's find out what pH actually is and find out what to do if your soil pH is too high or too low.

What is pH?

pH stands for potential hydrogen with the “p” meaning potential and the “H” standing for hydrogen. The pH scale is a scale that is used to rank the relative basicity or acidity of substances to other substances, based on the amount of hydrogen ion activity in a substance.



The pH scale ranges from 0 to 14; a pH of 7 is considered neutral. If pH values are greater than 7, the solution is considered basic or alkaline; if they are below 7, the solution is acidic.

Understanding your soil pH

pH is key to growing a healthy garden, however it is a factor that's often overlooked in favor of nutrient levels and soil consistency. While these are also crucial things to consider, the pH of the soil plays a major role in how well your plants can absorb the nutrients you provide them, so it is very important that you get it right!

Having your soil at the wrong pH often won't kill plants outright, but it can affect their growth and result in subpar blooms or crops, depending on how sensitive the plant is. In actuality, many plants are able to adapt to a range of pH levels. Hydrangeas, for example, produce different colored flowers depending on whether they're grown in acidic or alkaline soil.



Factors affecting soil pH:

Parent materials:

The pH value of a soil is influenced by the types of parent materials from which the soil was formed. Soils that developed from basic rocks generally have higher pH values than those formed from acid rocks.

Rainfall:

Rainfall also affects soil pH. Water passing through the soil leaches basic nutrients such as calcium and magnesium from the soil. They are replaced by acidic elements such as aluminum and iron. For this reason, soils formed under high rainfall conditions are more acidic than those formed under arid (dry) conditions.

The presence of fertilizers:

Usage of fertilizers that contain ammonium or urea speeds up the rate at which acidity develops. The decomposition of organic matter also adds to soil acidity.

Why keeping your soil pH at the optimal level is so important:

Soil pH has indirect yet far-reaching effects on plants. Plant nutrients become available or unavailable according to the soil's pH level.

Too high soil pH can cause yellowing between the veins of young leaves which indicates an iron deficiency, a condition arising not from a lack of iron in the soil but from insufficient soil acidity to put iron into a form that a plant can absorb. Plants need iron to produce chlorophyll, which gives plants oxygen as well as its healthy green colour.

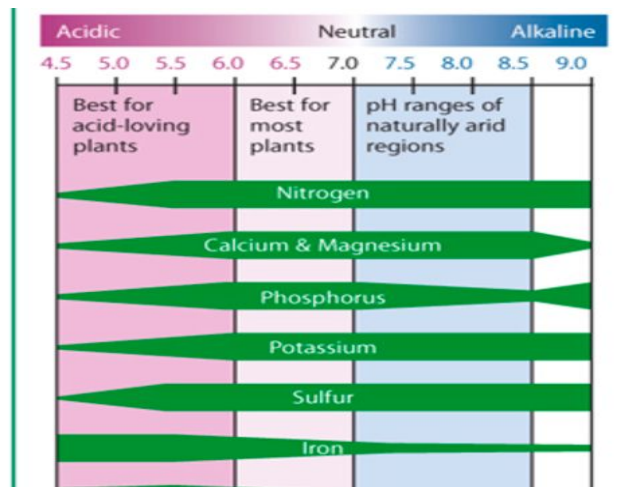


Most plants thrive in slightly acidic soil (pH about 6.5) because that pH affords them good access to all nutrients.

The darker side of soil pH is plant poisoning. Too low a pH level can render the plant nutrient manganese available at toxic levels. A pH level that is too low also liberates aluminum—not a plant nutrient—in amounts that can stunt root growth, limit overall plant growth and interfere with a plant's uptake of nutrients.

The importance of the pH of your soil:

Every plant on earth has a specific, ideal pH level that will optimize health and growth. When a plant is in soil that is not optimized for its growth needs, essential minerals and nutrients become locked up in the soil, unavailable to the plant.



Soil pH is very important because it influences several soil factors affecting plant growth, such as:

- (1) soil bacteria - the greater the amount of bacteria in the soil the greater the amount of growth of the plant and perform a wide variety of growth-promoting functions.
- (2) nutrient leaching - plant nutrients leach out of soils with a pH below 5.0 much more rapidly than from soils with values between 5.0 and 7.5
- (3) nutrient availability - having the right pH ensures your plants can get all the nutrients they need to grow.
- (4) toxic elements - Aluminum may become toxic to plant growth in certain soils with a pH below 5.0.
- (5) soil structure - especially of clay, In the optimum pH range clay soils are granular and are easily worked, whereas if the soil pH is either extremely acid or extremely alkaline, clays tend to become sticky and hard to cultivate.

Interpreting your pH value:

pH 3.0 - 5.0

- Very acidic soil
- Most plant nutrients, particularly calcium, potassium, magnesium and copper, become more soluble under very acid conditions and are easily washed away.
- Most phosphates in the soil are locked up and unavailable to plants below pH 5.1, although some acid tolerant plants can utilise aluminium phosphate.
- Acid sandy soils are often deficient in trace elements.
- Bacteria cannot rot organic matter below pH 4.7 resulting in fewer nutrients being available to plants.
- **Action:** Add lime to raise the pH to above 5.0. The addition of lime can help break up acid clay soils.

pH 5.1 - 6.0

- Acidic soil
- Ideal for ericaceous (lime-hating) plants.
- **Action:** Add [lime](#) if other plants are grown

pH 6.1 - 7.0

- Moderately acidic soil
- A pH 6.5 is the best general purpose pH for gardens, as it allows a wide range of plants to grow, except lime-hating plants.
- The availability of major nutrients is at its highest
- Bacterial and earthworm activity is optimum at this pH.
- **Action:** It isn't usually necessary to add anything to improve soil pH at this level.

pH 7.1 - 8.0

- Alkaline soil
- Phosphorus availability decreases.

- Iron and manganese become less available which could lead to lime-induced chlorosis.
- An advantage of this pH level is that clubroot disease of cabbage family crops (brassicas) is reduced.
- **Action:** Sulphur, iron sulphate and other acidifying agents can sometimes be added to reduce pH. Clay soils often require very large amounts of acidifying material and soils that have free sand or lime are not usually treatable.

What to do when correcting your pH value:

Try to avoid correcting the pH unless it is really necessary. It's more likely to do harm than good; the plant likes its peace and quiet. It is more important to monitor how the acidity changes over a longer period.

Lowering your pH value:

Two materials commonly used for lowering the soil pH are aluminum sulfate (image 1) and sulfur (image 2). These can be found at a garden supply center.



Aluminum sulfate will change the soil pH instantly because the aluminum produces the acidity as soon as it dissolves in the soil. Sulfur, however, requires some time for the conversion to sulfuric acid with the aid of soil bacteria. The conversion rate of the sulfur is dependent on the fineness of the sulfur, the amount of soil moisture, soil temperature and the presence of the bacteria. Depending on these factors, the conversion

rate of sulfur may be very slow and take several months if the conditions are not ideal. For this reason, most people use the aluminum sulfate.

Both of the materials should be worked into the soil after application to be most effective. If these materials are in contact with plant leaves as when applied to a lawn, they should be washed off the leaves immediately after application or it may result in a damaging leaf burn.

Ensure that you take extreme care not to over-apply the aluminum sulfate or the sulfur or it may kill your plant roots.

You can use the following tables to calculate the application rates for both the aluminum sulfate and the sulfur. The rates are in pounds per 10 square feet for a loamy soil. Reduce the rate by one-third for sandy soils and increase by one-half for clays.

Pounds of Aluminum Sulfate per 10 square feet to Lower the Soil pH to the Recommended Level

Present pH	Desired pH				
	6.5	6.0	5.5	5.0	4.5
8.0	1.8	2.4	3.3	4.2	4.8
7.5	1.2	2.1	2.7	3.6	4.2
7.0	0.6	1.2	2.1	3.0	3.6
6.5		0.6	1.5	2.4	2.7
6.0			0.6	1.5	2.1

Increasing your pH value:

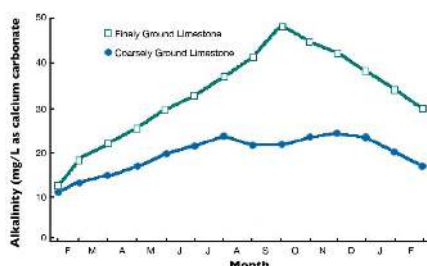
To make soils less acidic, the common practice is to apply a material that contains some form of lime. Ground agricultural limestone is most frequently used. The finer the limestone particles, the more rapidly it becomes effective. Different soils will require a different amount of lime to adjust the soil pH value. The texture of the soil, organic matter content

and the plants to be grown are all factors to consider in adjusting the pH value. For example, soils low in clay require less lime than soils high in clay to make the same pH change.

Selecting a Liming Material: Homeowners can choose from four types of ground limestone products: pulverized, granular, pelletized and hydrated. Pulverized lime is finely ground. Granular and pelletized lime are less likely to clog when spread with a fertilizer spreader over turf areas. The finer the grind of the limestone the faster it will change the soil pH value. Hydrated lime should be used with caution since it has a greater ability to neutralize soil acidity than regular limestone.

Time of Application & Lime Placement: Generally, for best results, limestone should be applied two to three months prior to planting to allow time for it to neutralize the acidity.

The most important factor determining the effectiveness of lime is placement. Maximum contact of lime with the soil is essential. Most liming materials are only slightly soluble in water, so incorporation in the soil is a must for lime reaction. Even when properly mixed with the soil, lime will have little effect on pH if the soil is dry. Moisture is essential for the lime-soil reaction to occur.



Wood Ashes: Wood ashes can be used to raise the soil pH. They contain fairly high amounts of potassium & calcium, and small amounts of phosphate, boron and other elements. Wood ashes are not as effective as limestone but with repeated use, they can drastically raise the pH value of a soil, especially if the soil is sandy in texture. Ashes should not come in contact with germinating seedlings or plant roots as they may cause damage.

Using wood ashes: Spread a thin layer during the winter and incorporate into the soil in the spring. Check the soil pH annually especially if you use wood ashes. Avoid using large amounts of wood ashes because excessively high pH values and subsequent nutrient deficiencies may result. Never apply more than 25 pounds of wood ash per 1,000 square feet in a given year.



Plants and their ideal pH range

Fruits:

Apple 5.5 - 6.5

Blackberry 5.0 - 6.0

Blueberry 4.0 - 6.0

Cherry 6.0 - 7.5

Crab Apple 5.0 - 6.0

Grapes 6.0 - 7.0

Oranges 6.0 - 7.5

Peach 6.0 - 7.0

Pear 6.0 - 7.5



Plum 6.0 - 8.8

Black Raspberry 5.5 - 7.0

Red Raspberry 6.0 - 7.5

Strawberry 5.0 - 7.5



Vegetables:

Asparagus 6.0 - 8.0

Beans 6.0 - 7.0

Beets 6.5 - 8.0

Broccoli 6.0 - 7.0

Cabbage 6.0 - 7.5

Cantaloupe 6.0 - 7.5

Carrots 5.5 - 7.0

Corn 5.5 - 7.5

Cucumbers 5.5 - 7.0



Eggplant 5.5 - 6.5

Lettuce 6.0 - 7.0

Onions 6.0 - 7.0

Peas 6.0 - 7.5

Peppers 5.5 - 7.0

Potatoes 4.8 - 6.5

Sweet Potatoes 5.2 - 6.0

Radishes 6.0 - 7.0

Rhubarb 5.5 - 7.0

Spinach 6.0 - 7.5

Squash 6.0 - 7.0

Tomatoes 5.5 - 7.5

Trees and shrubs:

Apple 5.0 - 6.5

Ash 6.0 - 7.5

Azalea 4.5 - 6.0

Basswood 6.0 - 7.5

Beautybush 6.0 - 7.5

Birch 5.0 - 6.5

Blackberry 5.0 - 6.0



Blueberry 4.0 - 6.0

Boxwood 6.0 - 7.5

Cherry,sour 6.0 - 7.0

Chestnut 5.0 - 6.5

Crab apple 6.0 - 7.5

Dogwood 5.0 - 7.0

Elder,box 6.0 - 8.0

Fir,balsam 5.0 - 6.0

Fir,douglas 6.0 - 7.0

Hemlock 5.0 - 6.0

Hydrangea, blue flowered 4.0 - 5.0

Hydrangea, pink flowered 6.0 - 7.0

Juniper 5.0 - 6.0

Laurel,mountain 4.5 - 6.0

Lemon 6.0 - 7.5

Lilac 6.0 - 7.5

Maple,sugar 6.0 - 7.5

Oak,white 5.0 - 6.5

Orange 6.0 - 7.5

Peach 6.0 - 7.0

Pear 6.0 - 7.5

Pecan 6.4 - 8.0

Pine,red 5.0 - 6.0

Pine,white 4.5 - 6.0

Plum 6.0 - 8.0

Raspberry,red 5.5 - 7.0

Rhododendron 4.5 - 6.0

Spruce 5.0 - 6.0

Walnut,black 6.0 - 8.0

Willow 6.0 - 8.0



Flowers:

Ageratum 6.0 - 7.5

Alyssum 6.0 - 7.5

Aster 5.5 - 7.5

Azalea 4.5 - 6.0

Cactus 4.5 - 6.0

Calendula 5.5 - 7.0
Candytuft 6.0 - 7.5
Carnation 6.0 - 7.5
Celosia 6.0 - 7.0
Cleome 6.0 - 7.0
Columbine 6.0 - 7.0
Coreopsis 5.0 - 6.0
Cosmos 5.0 - 8.0
Crocus 6.0 - 8.0
Chrysanthemum 6.0 - 7.0
Daffodil 6.0 - 6.5
Dahlia 6.0 - 7.5
Day Lily 6.0 - 8.0
Delphinium 6.0 - 7.5
Dianthus 6.0 - 7.5
Forget-Me-Not 6.0 - 7.0
Forsythia 6.0 - 8.0
Foxglove 6.0 - 7.5
Geranium 6.0 - 8.0
Gladiola 6.0 - 7.0
Gypsophila 6.0 - 7.5

Holly 5.0 - 6.5

Hyacinth 6.5 - 7.5

Iris 5.0 - 6.5

Lavender 6.5 - 7.5

Lilac 6.0 - 7.5

Marigold 5.5 - 7.0

Morning Glory 6.0 - 7.5

Nasturtium 5.5 - 7.5

Pansy 5.5 - 7.0

Petunia 6.0 - 7.5

Pincushion Flower 6.0 - 7.5

Pinks 6.0 - 7.5

Poppy 6.0 - 7.5

Portulaca 5.5 - 7.5

Primrose 5.5 - 6.5

Roses 5.5 - 7.0

Salvia 6.0 - 7.5

Snapdragon 5.5 - 7.0

Sunflower 5.0 - 7.0

Sweet Pea 6.0 - 7.5

Sweet William 6.0 - 7.5

Tulip 6.0 - 7.0

Virginia Bluebell 6.5 - 7.5

Viola 5.5 - 6.5

Wallflower 5.0 - 8.0

Zinnia 5.5 - 7.5



What makes up the perfect soil?

Soil is very useful, not only is it the foundation for plant growth it can prevent flooding as it absorbs rainfall.

Soil provides plants with the essential minerals and nutrients they need for growth. It isn't just the pH level of the soil that's important for plant growth it is also made up of some other characteristics such as:

Texture

You often hear gardeners talk about their soil's "crumb." This refers to the texture of the soil. Good soil is crumbly, like cookie crumbs scattered over the top of an ice cream sundae.

Plenty of organic matter

Organic matter is just dead plant and animal tissue, which decomposes and enriches your soil as humus. Humus is wonderful because it helps to improve your soil's texture by binding some of the smaller particles together, which increases your soil's aeration. Aeration is small holes which allow air, water and nutrients into your soil. It also improves your soil's ability to both absorb and drain moisture. Finally, organic matter helps provide nutrients to your plants. Microorganisms help break down the organic matter into its basic elements, which enables plants to absorb it and use it.

To increase the amount of organic matter in your soil, adding compost is a must because it will improve your soil immediately and introduce microorganisms that will break down organic matter further.

Three types of soil:

The next thing to consider is the structure of the soil. There are three main types of soil:

1. Clay soil: Clay has tiny particles that stick together, forming large clumps. While clay soil tends to be of higher fertility than other soil types, it is not optimal to garden in because its texture makes it very difficult for plant roots to work their way into it.

2. Sandy soil: Sandy soil is definitely easier to work than clay soil--but it has the opposite problems: it often drains too quickly and is less able to retain nutrients.
3. Loam: This is an ideal garden soil. Crumbly, full of organic matter, retains moisture yet still drains well. This is what we're working toward; this is "good" garden soil.

Why gardening is so beneficial:

Gardening is the act of tending and cultivating your garden there are many mental, physical and financial benefits to gardening.

Mental benefits of gardening:

Spending just 5 minutes in a green nature setting can boost mood and self esteem

Can relieve stress as your body releases endorphins

Can reduce depression, anxiety and stress-related symptoms.

Can alleviate the symptoms of dementia, such as aggressive behaviour.

Can increase the ability to concentrate and engage.

Can reduce reliance on medication, self-harming behaviour.

Can provide a source of community.

Physical benefits of Gardening:

Burns calories, 45 minutes of gardening burns approximately 177 calories planting, 157 calories weeding and 199 calories digging.

Can reduce your blood pressure

Spending time outside is good for your bones as it promotes the production of vitamin D

Growing your own food can make you eat healthier.

Reduced risk of dementia

Can improve your immune system

Can reduce your risk of a stroke

Financial benefits of gardening

Growing vegetables saves money on grocery bills.

You can sell unusual or rare flowers to wedding planners and craft shops.

Fine restaurants are sometimes on the lookout to purchase fresh ginseng, orris fruit and specialty peppers.

You can pot and sell mini herb gardens to city dwellers who have no yard.

One 25-foot tree can reduce your heating costs by up to 10%.

Great landscaping can increase real estates appraised value by 8-15%.

A house with trees is as much as 20% more saleable.

Six interesting facts about soil:

1. There are more microorganisms in a handful of soil than there are people on earth.
2. It takes 500 years to produce just under one inch of topsoil, the most productive layer of soil.
3. Approximately 10% of the world's carbon dioxide emissions are stored in soil.
4. A quarter of all known species on Earth call soil their home.
5. 95% of the food we eat comes from the soil – we'd be pretty hungry without it
6. Every minute we lose the equivalent of 30 football pitches of fertile soil. When we don't look after it, soil can lose its ability to support plant growth, become contaminated or erode away.

Sources:

*We compiled this information as an overview guide to soil pH and related topics around this. We gathered the info from various sources from the internet which we will link down below. If you want to know more, please do more research.

Thank you so much for reading, we hope you found this information helpful and if you would like to contact us for any reason regarding this e book or the test strips we provided, please email us: support@jnwdirect.com.

Links:

finegardening.com/article/the-four-things-you-need-to-know-about-soil-ph
soilquality.org/indicators/soil_ph.html

gardeningknowhow.com/garden-how-to/soil-fertilizers/iron-for-plants.htm

sciencetrends.com/what-does-ph-stand-for-and-mean/

almanac.com/plant-ph

gardenersnet.com/atoz/ph-fruits.htm

gardenersnet.com/atoz/phlevel1.htm

hgic.clemson.edu/factsheet/changing-the-ph-of-your-soil/

canna-uk.com/ph_acidity

soilassociation.org/organic-living/features/10-soil-facts/

motherearthnews.com/organic-gardening/wood-ash-fertilizer-zb0z09zblon

pss.uvm.edu/ppp/pubs/oh34.htm

quicksocrop.ie/blog/2014/01/top-10-interesting-facts-about-soil/

thrive.org.uk/how-we-help/what-we-do/why-gardening-is-good-for-our-health/why-gardening-is-good-for-your-mental-wellbeing

gardenersnet.com/atoz/phlevel2.htm

rhs.org.uk/advice/profile?pid=239

If you would like the large color chart associated with your test kit please contact me (Nathan) at support@jnwdirect.com, tell me the product you bought and I will attach the correct large color chart for printing. If you have any other questions please just send me an email.

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